



TITLE:

TAXONOMIC STUDIES ON THE
SHALLOW WATER GAMMARIDEAN
AMPHIPODA OF WEST KYUSHU,
JAPAN -III. DEXAMINIDAE
(POLYCHERIA AND
PARADEXAMINE)-

AUTHOR(S):

Hirayama, Akira

CITATION:

Hirayama, Akira. TAXONOMIC STUDIES ON THE SHALLOW WATER GAMMARIDEAN AMPHIPODA OF WEST KYUSHU, JAPAN -III. DEXAMINIDAE (POLYCHERIA AND PARADEXAMINE)-. PUBLICATIONS OF THE SETO MARINE BIOLOGICAL LABORATORY 1984, 29(4-6): 187-230

ISSUE DATE:

1984-10-31

URL:

<http://hdl.handle.net/2433/176094>

RIGHT:

**TAXONOMIC STUDIES ON THE SHALLOW WATER
GAMMARIDEAN AMPHIPODA OF WEST KYUSHU, JAPAN
III. DEXAMINIDAE (*POLYCHERIA* AND *PARADEXAMINE*)¹⁾**

AKIRA HIRAYAMA²⁾

Amakusa Marine Biological Laboratory, Kyushu University
Reihoku-cho, Amakusa, Kumamoto 863-25, Japan

With Text-figures 101-123

Dexaminidae

Key to the genera of Dexaminidae

- 1 Peraeopods cheliform *Polycheria*
 Peraeopods simple 2
- 2 Body large, palp of maxilla 1 uniarticulate, inner plate of maxilliped small
 *Paradexamine*
 Body small, palp of maxilla 1 biarticulate, inner plate of maxilliped
 vestigial *Guernea*

Polycheria

Key to the species of *Polycheria*

- 1 Inner ramus of uropod 3 not setose, telson not decreasing in width
 *P. atolli orientalis*
 Inner ramus of uropod 3 setose on inner margin, telson decreasing in width
 *P. amakusaensis*

***Polycheria atolli* Walker, 1905 *orientalis* subsp. nov.**

(Fig. 101-105)

Body: Head large, equal to peraeonites 1-3 combined in length, rostrum absent, anterior head lobe not producing, anterior and ventral margins continuously rounded, inferior antennal sinus absent. Eyes very large, oval. Peraeonites 1-2 combined subequal to peraeonite 3 in width, peraeonites 3-7 subequal to each other

1) Contributions from the Amakusa Marine Biological Laboratory, Kyushu University, No. 284c.
 2) Present address: Biological Laboratory, the Faculty of Liberal Arts, Asia University, 5-24-10 Sakai, Musashino-shi, Tokyo 180, Japan.

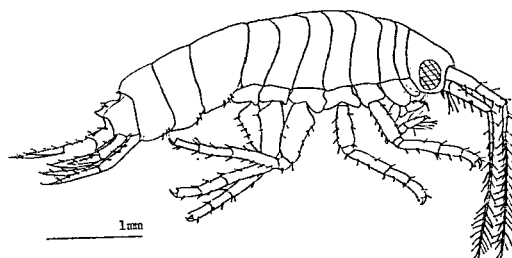


Fig. 101. *Polycheria atolli orientalis* subsp. nov. Holotype, female, 4.5 mm.

in width, gnathopods weakly developed, peraeopods cheliform. Dorsal length of pleonite 1 subequal to one of peraeonites 6–7 combined, anteroventral angle of pleonal epimeron 1 gently rounded, with four spines, posteroventral angle with one acute tooth armed with one minute seta basally, posterior margin gently expanding, with one medial minute seta. Anteroventral margin of pleonal epimeron 2 extending forward, with one seta, rounded, gentle concavity with one seta, anterior part of lower margin with two spines, posterodistal angle with one acute tooth armed with one minute seta basally. Anteroventral margin of pleonal epimeron 3 extending forward, rounded, anterior half of ventral margin with three spines, posteroventral angle with one acute tooth armed basally with one seta, posterior margin gently rounded, with one medial minute seta. Urosomite 1 subequal to pleonite 3 in dorsal length, concave medially, both posterolateral margins of back with one acute tooth respectively, dorsal keel developed, with one medial pair of spines, posterior margin of keel roundish, urosomite 2 very short, almost concealed by urosomite 1, back roundish, both posterolateral margins of back with one spine respectively, urosomite 3 about half as long as urosomite 1, dorsal keel developed, gradually elevating to distal end, extending backward, distal end acute, both posterolateral margins of back with one spine respectively, both posterolateral margins with two acute teeth respectively.

Antennae: Both antennae equal to each other in length, flagellum dispersively setose, setae stiff. Peduncular segment 1 of antenna 1 two thirds as long as head

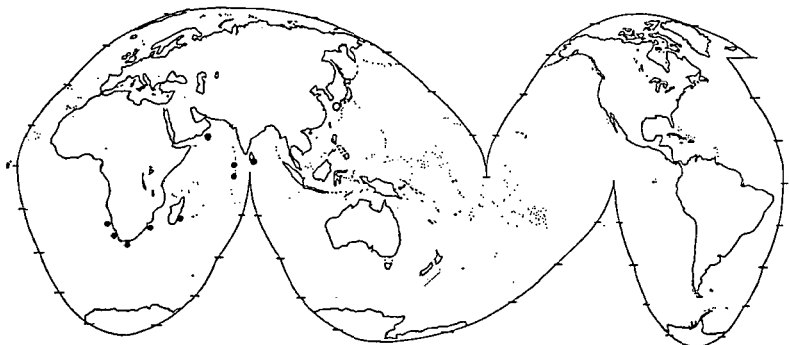


Fig. 102. Distribution of *Polycheria atolli* Walker (●) and *P. atolli orientalis* subsp. nov. (○) in the world.

length, gradually narrowing a little, distal lower margin with one spine, peduncular segment 2 slender and a little longer than peduncular segment 1, gradually narrowing a little, lower proximal half with two spines, gradually narrowing a little, lower proximal half with two spines, peduncular segment 3 a little slenderer than peduncular segment 2, about one third as long as it, each segment of flagellum with one

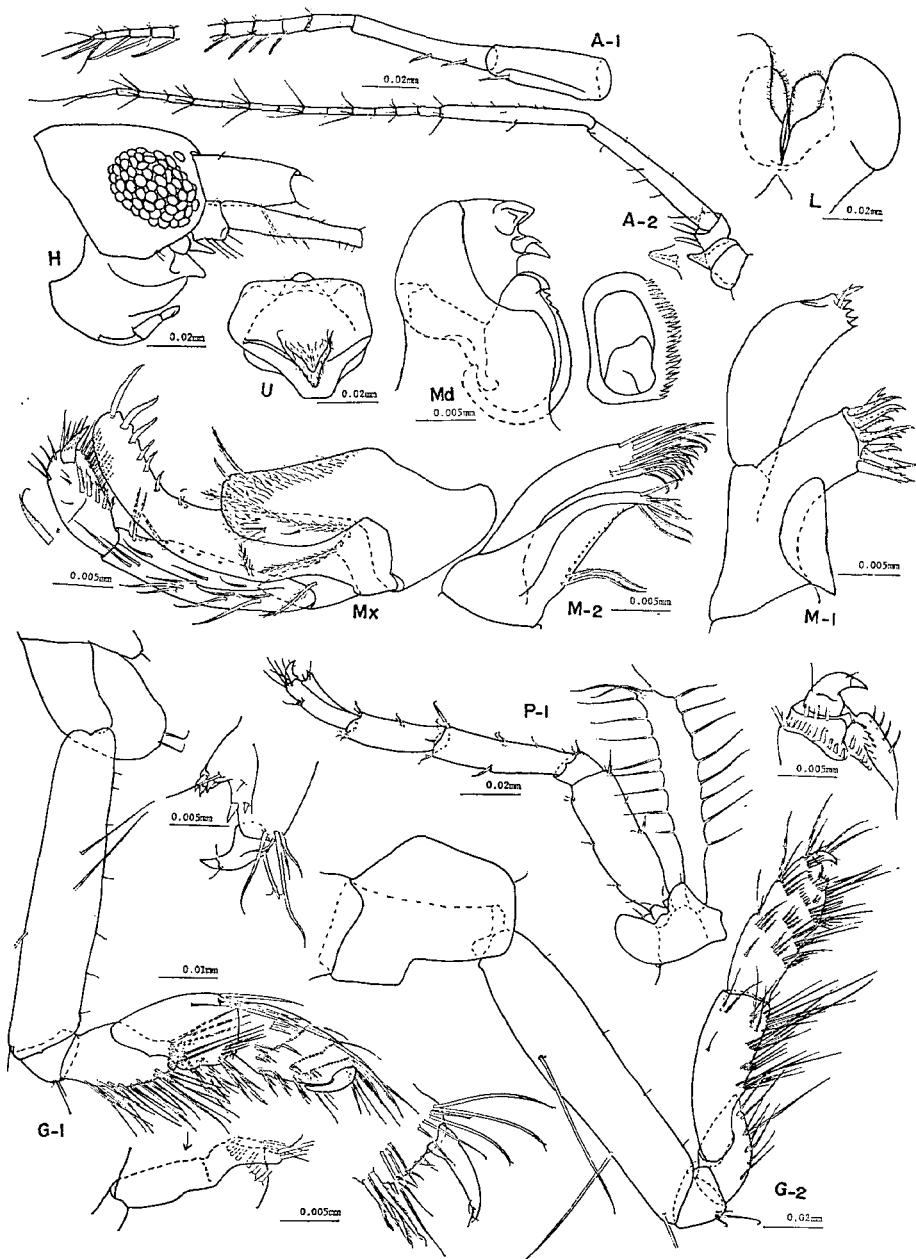


Fig. 103. *Polycheria atolli orientalis* subsp. nov. Holotype, female, 4.5 mm.

distal aesthetasc except for terminal one, especially article 2 with one medial aesthetasc. Peduncular segments 1-3 of antenna 2 small, rectangular in lateral view, gland cone of peduncular segment 2 stout, upper part of peduncular segment 3 expanding, rounded, with two setae, peduncular segment 4 subequal to peduncular segment 2 of antenna 1 in length and width, peduncular segment 5 as long as and a little slenderer than peduncular segment 4, each segment of flagellum with several distal short stiff setae.

Mouthparts: Apical margin of upper lip slightly concave, finely bristly. Inner lobe of lower lip large, fused outer plate, finely pubescent on apical and inner margins, complex of shoulders and mandibular process oval, mandibular process rather vestigial. Both mandibles similar to each other as a whole, incisor stout, with three teeth, lacinia mobilis bifid, stout, distance between lacinia mobilis and molar process narrow, molar process well developed, but rasp weakly developed, finely pectinate, outer marginal serration developed, palp absent, palpal hump vestigial. Inner plate of maxilla 1 triangular, roundish, without any seta, outer plate with nine stout teeth, each tooth with one or several teeth medially, palp unarticulate, broad, gently curved, distal part slightly narrow, apical margin with four triangular teeth and two spines. Maxilla 2 ordinarily, facial margin of inner plate with nineteen pectinate and one apical simple setae, apical margin with four simple setae of which apices are acute, outer plate with one row of seven stiff setae, and one stiff seta near apical margin, apical setae paired in about eight, slightly curved distally, apices not acute. Inner plate of maxilliped densely pubescent, with three spines and one facial plumose seta around apical margin, else two setae bearing on outer margin, outer plate not or slightly extending beyond palp, inner margin with eight teeth which gradually elongate, distal five teeth minutely pectinate, inner margin of basal part with four long plumose setae, palp four articulate, inner margin of proximal segment with one plumose seta, outer margin expanding in triangle, 2nd segment long, with ten plumose setae on inner side, with four rows of two to four simple setae on outer margin, 3rd segment about half as long as 2nd one, long oval, distal half of inner margin and distal part of outer margin with one row of about ten simple setae respectively, lateromedial part of inner side with one oblique row of five short stout setae pectinated on distal half, dactyl short, stout, nail-like.

Gnathopod 1: Coxa 1 very small, long semioval, anterodistal margin with two setae. Gnathopod 1 short, slender, uniform in width. Basis about half as long as gnathopod 1, anterior margin with several small setae, lateromedial margin with two long setae pectinated on distal half, posteromedial margin with one long seta, posterodistal end with two small setae. Ischium small, posterior margin much longer than anterior one, with three setae on distal end. Distal end of merus oblique, posterior margin twice as long as anterior one, crenulate, densely setose in rows, posterodistal end forming of terrace, surrounded by about six long setae, supporting carpus. Carpus as long as merus, anterior margin about twice as long as posterior one, gently rounded, with one medial slender seta, distal terrace with three long stout setae, posterior margin crenulate, with three rows of several setae,

five apical setae pectinated on distal half. Propod as long as carpus, posterior margin crenulate, with three rows of three or four short pectinate setae, inner facial part with four rows of many pectinate setae, and one outer simple seta, anterodistal end with six simple setae or six feeble spines, palm transverse, finely serrate, with seven small setae. Dactyl falcate, grasping margin with three minute setae near apex.

Gnathopod 2: Anterodistal margin of coxa 2 expanding forward, almost rectangular, anterodistal angle with one seta, posterior margin concave in L-formed, lower margin straight. Gnathopod 2 similar to gnathopod 1 in size and shape, but carpus and propod slenderer and longer than those of gnathopod 1, anterior margin of carpus with four rows of simple setae, pectinate and simple setae of propod arrayed in four rows on margin and facial part, propod with one anterodistal pair of spines, palp consisting of hump and distal steep slope, short, hump with one row of four short setae, and two rows of four small and short setae. Dactyl small, but stout, claw-like.

Peraeopods 1-2: Coxa 3 bilobate, lower margin of posterior lobe triangular, roundish, lower distal angle with two small setae, anterior lobe extending forward and downward, anterior margin rounded. Coxa 4 similar to coxa 3 except for posterior lobe rectangular. Peraeopods 1-2 very similar to each other. Basis about one thirds as long as peraeopod, posterodistal half with one set of one minute and one more stout small setae, one small seta, and one distal set of two minute and one more stout small setae, anterior margin of peraeopod 1 with three single setae and one distal set of two setae, one of peraeopod 2 with three single setae. Ischium small, wider than long, posterior margin longer than anterior one, with four setae. Merus shorter than basis, posterior margin with one proximal spine and one medial pair of spines, posterodistal end of peraeopod 1 with four spines, one of peraeopod 2 with three spines, anterior margin of peraeopod 1 with one medial and three distal spines, anterior margin of peraeopod 2 with one medial pair of spines and three distal spines. Carpus narrower than merus, longer than half of merus, posterior margin with one medial set of three spines, and one distal set of two spines and one seta, anterodistal end of peraeopod 1 with three spines, one of peraeopod 2 with one spine. Propod of peraeopod 1 narrower and shorter than carpus, gradually widening a little, posterodistal end producing, its apex with three stout and conical teeth, else its projection with one short simple seta on inner basal margin, anterodistal margin with one set of three spines and one seta, its distal end with five setae, palm oblique, straight, defined by posterodistal projection, with one medial pair of spines and one minute seta near posterodistal projection. Propod of peraeopod 2 almost uniform in width, very similar to one of peraeopod 1 except for one set of four spines growing on anterodistal margin and lacking one minute seta on palm. Dactyl small, but stout, falcate, with two setae near apex, anteroproximal margin with one small pinnate seta.

Peraeopod 3: Coxa 3 bilobate, anterior lobe expanding downward, lower margin rounded, posterior margin of posterior lobe rounded, with one seta, lower

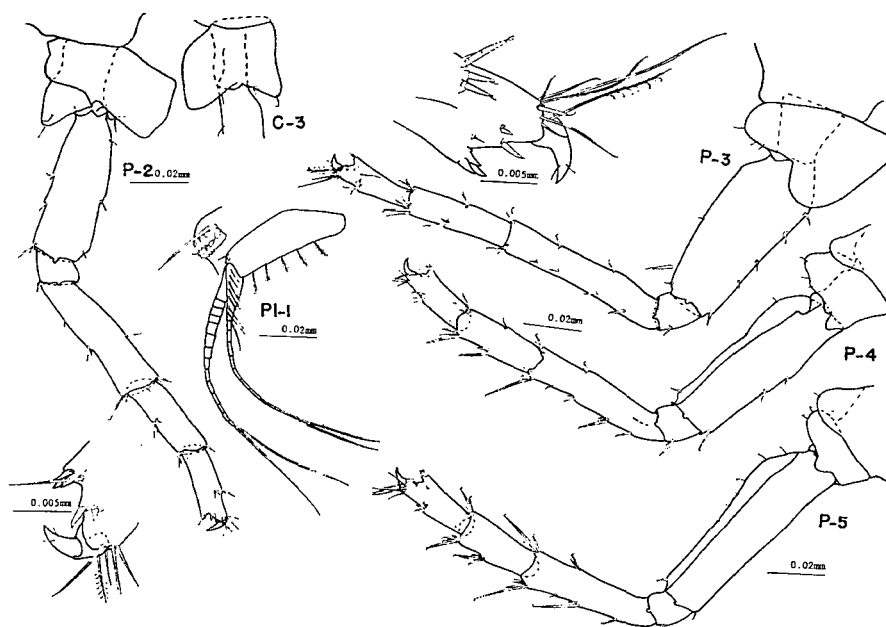


Fig. 104. *Polycheria atollis orientalis* subsp. nov. Holotype, female, 4.5 mm.

margin almost straight, with two setae. Peraeopod 3 similar to peraeopod 1, a little longer than it. Basis a little expanding proximally, gradually narrowing, anterior margin with five spines, posterior margin with two proximal and medial minute setae, and one distal spine. Ischium with one anterodistal spine. Merus longer than one of peraeopod 1, anterior margin with four spines and one distal set of three spines, posterior margin with two medial spines and one distal pair of spines. Anterior margin of carpus with one medial pair of spines, and one distal set of three spines and one seta, posterior margin with one medial pair of spines and three distal spines. Posterior projection of propod lacking one short seta, anterodistal angle with seven setae and one spine. Anteroproximal margin of dactyl bearing long pinnate setae.

Peraeopod 4: Anterior lobe of coxa 6 expanding downward, expansion small, rounded, posterior lobe expanding backward, subrectangular, lower margin with three setae. Peraeopod 4 similar to peraeopod 3 except for basis and a number of spines and setae. Basis slightly expanding posteroproximally, with two minute setae on proximal half and one distal spine, anterior margin with two medial and one distal spines. Anterodistal end of ischium with one set of two small and long spines. Anterior margin of merus with one spine, one set of two short and one long spines, one pair of spines, one spine, and one distal set of three small and one long spines in formula, posterior margin with two medial and distal pairs of spines. Anterior margin of carpus with one medial set of two short and long spines, and one set of three small spines and one seta, posterior margin with one medial pair

of small spines and one distal set of three spines. Propod similar to one of peraeopod 3 except for one anteromedial row of three spines and one locking spine. Dactyl similar to one of peraeopod 3.

Peraeopod 5: Coxa 7 similar to coxa 6, posterior margin of posterior lobe rounded, with two small setae. Peraeopod 5 similar to peraeopod 4 except for basis and a number of spines and setae. Basis slightly expanding posteroproximally, posterior margin with six small setae on proximal half and one distal spine, anterior margin with one medial minute seta and one distal spine. Anterodistal end of ischium with one small seta and one spine. Merus shorter than one of peraeopod 3 in relative proportion, anterior margin with one small spine, one set of two small and long spines, one small spine, and one distal set of three short and one long spines, posterior margin with one medial pair of spines, and one distal set of two short and one long spines. Anterior margin of carpus with one medial set of three spines and one distal set of five spines, posterodistal end with four spines. Propod very similar to one of peraeopod 3 except for one anteromedial row of three spines. Dactyl very similar to one of peraeopod 3.

Pleopods: Pleopods similar to each other, peduncle stout, one simple seta growing near coupling spines, rami slender, long, distal swimming setae shorter than rami.

Uropods: Uropod 1 not extending beyond uropod 3, peduncle shorter than rami, outer margin with two medial and one distal spines, its distal end extending in triangle, inner distal end with one spine, both rami equal to each other in length, with four small spines respectively, apices taper, acute. Peduncle of uropod 2 equal

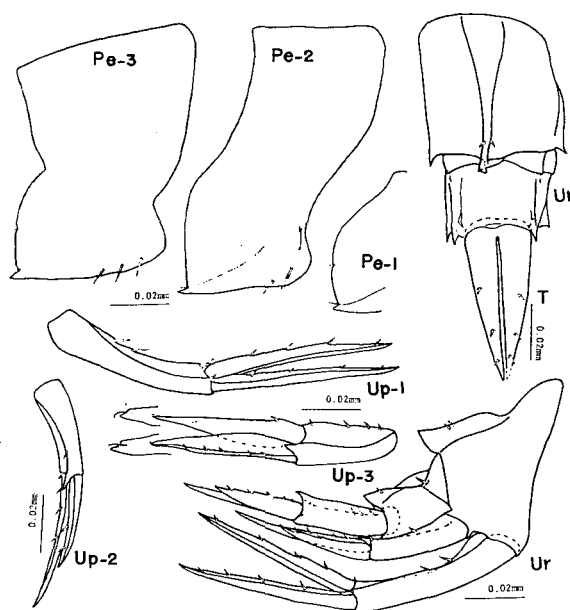


Fig. 105. *Polycheria atollis orientalis* subsp. nov. Holotype, female, 4.5 mm.

to outer ramus in length, with one spine on outer distal margin and inner distal end, outer distal end much extending, acute, tooth-like, outer ramus taper, with two spines on distal half, inner ramus one and half times as long as outer one, with three spines on proximal triangular projection, inner margin with three spines on proximal half and one spine on distal margin, both rami equal to each other in length, taper, apical margin with one minute seta, outer margin of outer ramus with five spines, inner margin of inner ramus with one proximal spine and one distal minute seta.

Telson: Telson as long as rami of uropod 3, triangular, deeply cleft to near base, each lobe with three spines on about distal half.

Material examined. Holotype: Female, 4.5 mm. Type-locality: Shijiki Bay. Date: June, 1977. Collection No.: AMBL-Amph. 24.

Remarks. The new subspecies well agrees with *Polycheria atoll*i (Shellenberg 1931, Ledoyer 1967, etc.) and especially the palp of these maxilla is not setose and is serrate, but the following differences are found; (1) coxa 1 extending forward anterodistally, (2) palp of maxilla 1 with one seta, (3) posterodistal end of palm of peraeopods 1-2 with one tooth, and (4) posterodistal end of palm of peraeopods 3-5 with one tooth.

Polycheria amakusaensis sp. nov.

(Fig. 106-108)

Body: Head large, equal to peraeonites 1-2 combined in length, anterior margin slightly rounded. Eyes very large, especially occupying more than half of head in male, in female smaller than those in male in relative proportion. Peraeonites gradually making broader and deeper, coxae reduced, peraeopods stout. Pleon developed, gradually growing in size, anterior and ventral margins of pleonal epimeron 1 continuously rounded, anterior part of ventral margin with three setae, posterior margin almost straight, its ventral angle rounded, anteroventral margin of pleonal epimeron 2 producing forward, anterior half of ventral margin rounded downward,

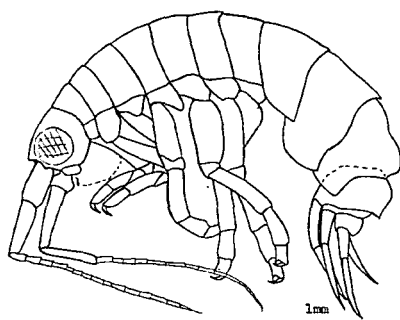


Fig. 106. *Polycheria amakusaensis* sp. nov.
Holotype, male, 4.5 mm.

with two spines, posteroventral angle with one stout tooth basally armed with one seta, posterior margin slightly expanding, anteroventral margin of pleonal epimeron 3 producing forward, anterior half of ventral margin with two spines, posteroventral angle with one stout basally armed with one seta, posterior margin gently expanding medially. Urosome subequal to pleonite 3 in length, urosomite 1 twice as long as urosomites 2-3 combined, back deeply concave, concavity pectinate in rows, posterior half of back ridged along central line, keel extending backward and upward on distal angle, pointed distally, with one pair of spines, posterolateral margin expanding backward, concealing anterior half of urosomite 2, anterior angle of ventral margin with one large acute tooth on both sides, urosomite 2 about half as long as urosomite 3, both lateral sides of back slightly ridged, with one spine on posteroventral angle, each dorsoal margin of both lateral sides of urosomite 3 with one acute tooth which is armed with one spine.

Antennae: Antenna 1 a little shorter than antenna 2, peduncular segment 1 two thirds as long as head length, very stout, distal half of lower margin densely bristly in rows, peduncular segment 2 shorter than peduncular segment 1, gradually decreasing in thickness, lower margin with five pairs of setae, peduncular segment 3 geniculating to peduncular segment 2, about one third as long as peduncular segment 2, accessory flagellum absent, each segment of flagellum with one distal aesthetasc except for proximal and terminal segments, especially medial part of articles 3-4 with one aesthetasc, apex of terminal segment with two stiff long and short setae. Peduncular segment 1 of antenna 2 covering basal margin of peduncular segment 2, peduncular segment 2 with one stout gland cone, peduncular segment 3 short, stout, outer margin of distal end producing, its projection triangular, lower margin with four pairs of setae, peduncular segment 4 similar to peduncular segment 2 of antenna 1, upper margin bristly in rows except for proximal and distal margins, peduncular segment 5 equal to peduncular segment 4 in length, narrower than distal margin of peduncular segment 4, distal end concave, distal end of each segment in flagellum with one small slender spine and several setae except for proximal and terminal segments, terminal segment with one stiff seta which is as long as apical two segments.

Mouthparts: Apical margin of upper lip slightly concave, minutely pubescent. Inner plate of lower lip developed, minutely pubescent, shoulders minutely pubescent, mandibular process weakly developed, rounded. Inner plate of maxilla 1 long oval, pubescent on inner margin, outer plate with nine teeth serrated medially, palp uniarticulate, gradually expanding, with five teeth, one spine and one chisel-like spine on distal end. Inner margin of inner plate on maxilla 2 straight, with seventeen simple setae, apical margin with three stiff setae, outer margin rounded, densely pubescent, outer plate extending beyond inner one, apical margin rounded, with five stiff and three flexible setae, distal part of inner margin with three pectinate and one simple setae. Both mandibles similar to each other, incisor with about five teeth, lacinia mobilis with four teeth, accessory blades forming three triangular teeth in left mandible, absent in right one, concavity between incisor and molar

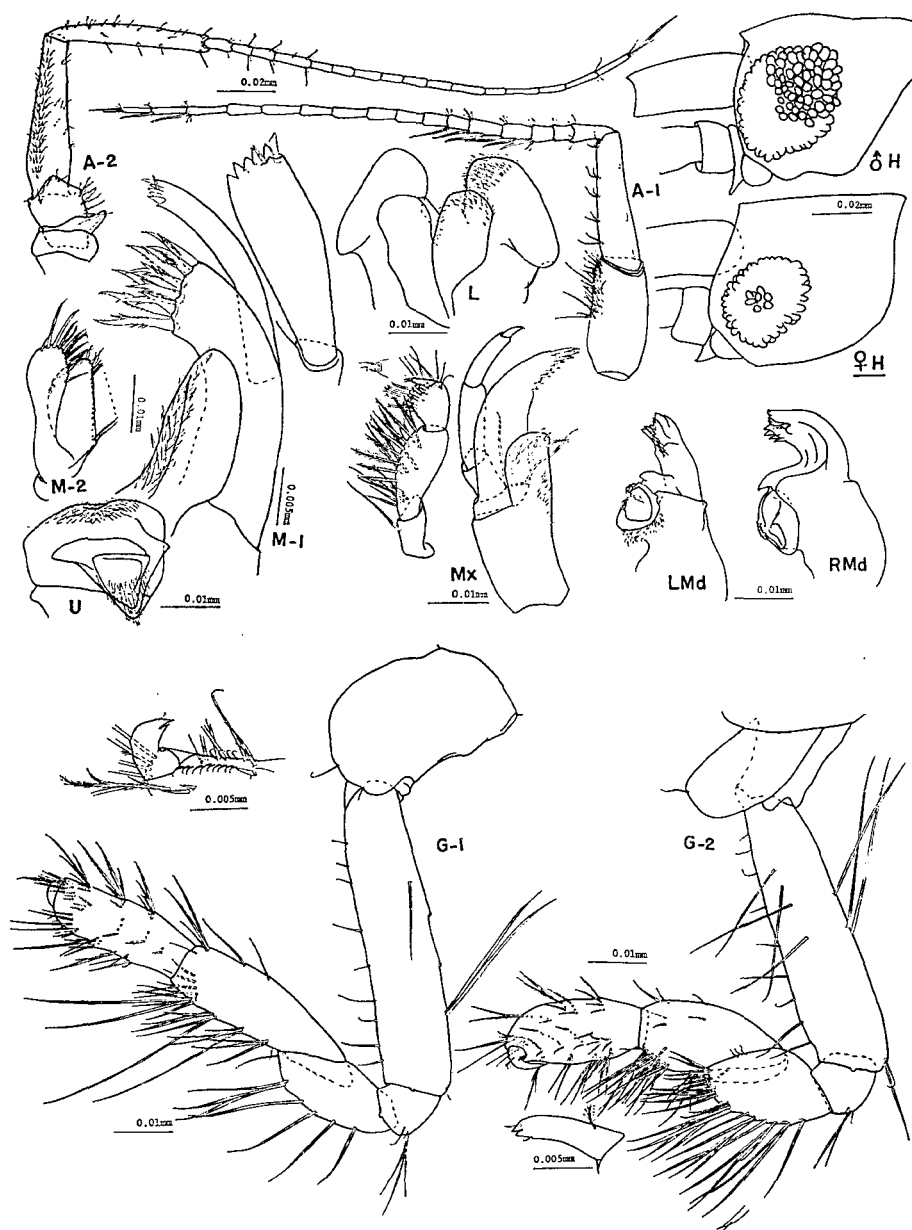


Fig. 107. *Polycheria amakusaensis* sp. nov. Holotype, male, 4.5 mm.

process deep, large tooth growing out near upper part of molar process, acute, molar process developed, marginal fringe developed, palp absent, palpal hump vestigial, its apex minutely pectinate. Maxilliped weakly developed, inner plate pubescent, outer apical margin rounded, inner distal margin with three spines and one plumose seta, inner margin of outer plate with nine teeth in left mandible and seven teeth

in right one, these teeth of both mandibles elongating to apical one, palp four articulate, not extending beyond outer plate, outer distal end of proximal segment extending, with several setae, inner margin of 2nd segment with about sixteen dispersively pinnate setae, 3rd segment hump-like, inner distal half with one row of five spines and one row of ten setae curled distally, dactyl falcate, with one acute nail.

Gnathopod 1: Gnathopod 1 small. Coxa 1 rectangular, lower margin slightly rounded, with one anterior seta. Basis shorter than half of gnathopod 1, slender, gradually increasing in width, posterior margin with three medial long setae and one distal pair of setae, anterior margin with nine short setae, lateromedial part with four long setae. Ischium small, posterior margin rounded, with one set of two short and two longer setae. Merus twice as long as ischium, proximal margin expanding, posterior margin crenulate, with one, two, three, one and six long setae in formula, distal margin oblique, with five and six long setae in two rows, distal two thirds of anterior margin connecting with carpus, with medial short setae. Carpus longer than merus, gradually increasing a little in width, but distal part decreasing in width, anterodistal half with two single setae and one distal set of three setae, posterior margin with one set of three simple setae, one set of one pectinate and three simple setae, one set of three pectinate and three simple setae, one distal transverse row of nine simple setae, and two distal simple setae in formula. Propod as long as carpus, long oval, anterior margin with three rows of four and ten pectinate setae, inner lateral side with two, four, six, eight and sixteen short pectinate setae in formula, these setae arrayed in rows, posterior margin with four sets of several setae, and two opposite rows of small setae and one proximal spine. Dactyl short, not scimitar, apex bifid, with two small setae.

Gnathopod 2: Coxa 2 larger than coxa 1, lower margin rounded, with two setae. Gnathopod 2 similar to gnathopod 1, but less setose than the latter. Carpus slenderer than one of gnathopod 1, with three anterodistal long setae, posterior margin with several long simple and several pectinate setae. Palm undefined, with one spine, one side with one row of ten small curl setae, the other side with one row of four curl setae.

Coxae 3-7: Coxae 3-4 very similar to each other, lower margin gently concave medially, both distal angles extending forward and backward, posterior extension with one small seta. Coxa 5 subrectangular, lower margin roundly extending on posterior half, with two small setae on anterodistal angle. Lower margin of coxa 6 uneven, anterior margin expanding in triangle, with two setae. Coxa 7 longer than deep, anterior lobe much expanding, rounded, with two setae on lower margin.

Peraeopods 1-2: Peraeopods 1-2 similar to each other in shape and size. Basis one third as long as peraeopod, anterior margin with one medial seta and one distal pair of small setae, posterior margin with three medial slender spines, and one distal set of one spine and one seta. Ischium wider than long, postero-distal end with one spine and several small setae. Merus shorter than basis, posterior margin with one spine, one medial pair of spines and one spine in peraeopod

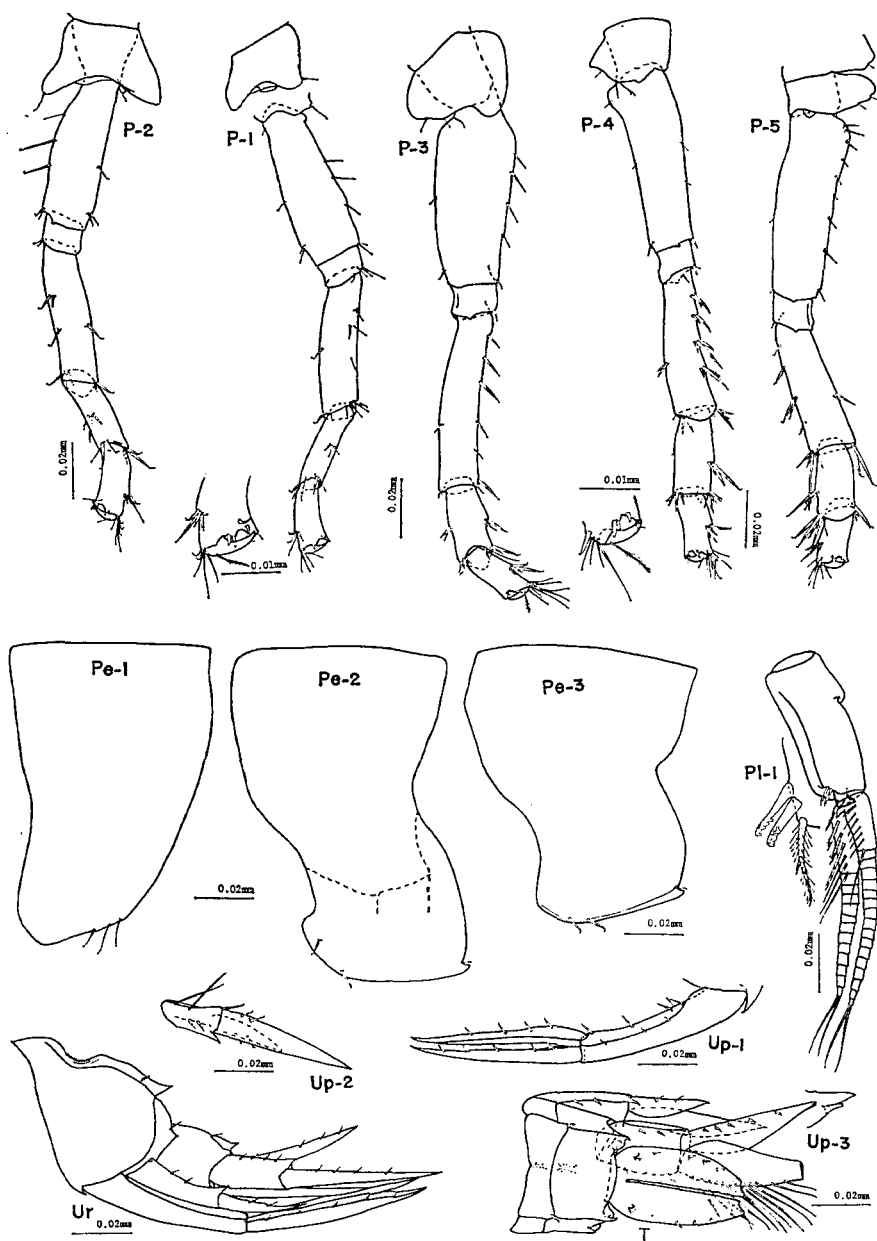


Fig. 108. *Polycheria amakusaensis* sp. nov. Holotype, male, 4.5 mm.

1, with one medial pair of spines and one spine in pereopod 2, distal end with three or four spines, anterior margin with one spine, posterior margin with one medial set of three spines, and one distal set of one spine and two setae, anterodistal end with three spines. Propod about half as long as merus, anteromedial terrace with three spines and one stiff setae, posterodistal end slightly producing forward, its

apex with two small teeth and one minute seta, palm concave, with one pair of locking spines, one single and one small flexible setae. Dactyl reaching posterior expansion of palm.

Peraeopod 3: Peraeopod 3 very similar to peraeopod 1. Basis more expanding than one of peraeopod 1, with five posterior spines, one anteromedial seta and one anterodistal spine. Ischium with one posterodistal spine. Posterior margin of merus with five medial spines, and one distal set of two spines and one small seta, anterior margin with one medial spine, and one distal set of one spine and one small seta. Anterior margin of carpus with one medial pair of spines and four distal spines, posterior margin with three medial and four distal spines. Posterior margin of propod with one medial set of four spines, and one distal set of one spine and about eight medial set of four spines, and one distal set of one spine and about eight setae, palm lacking setae.

Peraeopod 4: Anteroproximal margin of basis produced, with one seta, medial margin with one small seta, distal end with one spine, posterior margin with two medial setae and one distal spine. Anterior margin of merus with two medial and distal pairs of spines, posterior margin with two, two, three and four distal spines in formula. Anterior margin of carpus with one medial and four distal spines, posterior margin with one medial set of three spines, and six distal spines. Propod similar to one of peraeopod 3.

Peraeopod 5: Anterior margin of basis with ten spines, posterior margin with one medial small and one distal setae. Ischium similar to one of peraeopod 3. Posterior margin of merus with one, two, three, one and four distal spines in formula, the longest spine of distal ones subequal to carpus in length, anterior margin with one medial pair of spines and two distal longer setae. Anterodistal end of carpus with four spines, posterior margin with one medial set of three spines, one set of four spines, and one distal set of four spines and one seta. Propod and dactyl similar to those of peraeopod 3.

Pleopods: Pleopods 1-2 very similar to each other, distal margin of peduncle with one set of two coupling spines and one plumose seta, swimming setae short. Peduncle of pleopod 3 shorter than one of pleopod 1, stout.

Uropods: Uropod 1 not extending beyond uropod 3, peduncle as long as rami, with three spines on outer side and four spines on inner side, both rami equal to each other in length, taper distally, outer margin of outer ramus with five spines, inner margin of inner ramus with four spines. Uropod 2 longer than peduncle of uropod 1, peduncle shorter than outer ramus, inner margin with two setae and one distal spine, outer margin with two medial spines and one distal stout tooth, inner ramus about half as long as outer one, with two medial spines on outer margin, outer ramus with two proximal spines. Uropod 3 longer than peduncle of uropod 1, peduncle two thirds as long as outer ramus, with three spines on outer margin, and one proximal seta and three spines on inner margin, outer ramus longer than inner one, outer margin with five spines, apex acute, with one tooth of which apex is bifid, inner ramus truncate, with eleven simple setae on inner margin.

Telson: Telson long oval, as long as outer ramus of uropod 3, truncate, cleft to near base, outer margin of each lobe with one proximal pair of small plumose setae, in turn with one small seta and four spines in one row.

Material examined. Holotype: Male, 4.5 mm. Type-locality: Tsuji Island. Date: April, 1968. Paratype: 9 specimens. Collector: T. Kikuchi. Collection No.: AMBL-Amph. 38.

Remarks. The present species is very similar to *Polycheria atolli orientalis* subsp. nov., but is distinguished from it by the following points; (1) peduncular segment 1 of antenna 1 and peduncular segment 4 of antenna 2 not bristly, (2) inner margin of inner plate of uropod 2 not setose, (3) palmar distal end of peraeopods with three teeth, and (4) telson slender and not rounded.

Paradexamine

Key to the species of *Paradexamine*

- 1 Urosomite 1 with lateral teeth *P. bisetigera*
 Urosomite 1 lacking lateral teeth 2
- 2 Mandibular process of lower lip attenuate, curled *P. marlie*
 Mandibular process of lower lip blunt 3
- 3 Posterior thin plate of basis of peraeopod 3 narrow distally *P. micronesica*
 Posterior thin plate of basis of peraeopod 3 broad distally 4
- 4 Basis of peraeopod 5 roundly expanding backward, posterior margin
 conspicuously serrate *P. gigas*
 Posterior thin plate of basis peraeopod 5 narrow, not serrate *P. setigera*

Paradexamine bisetigera sp. nov.

(Fig. 109–111)

Body: Head subequal to peraeonites 1–2 combined in length, back roundish, rostrum decurved, acute distally, inserting between both antennae 1, reaching middle of peduncular segment 1 of antenna 1, superior antennal sinus deeply concave, anterior head lobe developed, semicircular, inferior antennal sinus shallow, rectangular, lower margin slightly concave. Eyes medium, reniform, placing on anterior head lobe. Peraeonites gradually increasing in size, peraeonites 6–7 a little producing distally in large specimens, coxae rather reduced in depth. Pleonites subequal to each other in size, each larger than peraeonite 7, carinate, distally with two lateral ridges, these three ridges acutely pointed, lower margin of pleonal epimeron 1 rounded, with three spines and three small setae, posteroventral angle with one small acute tooth, posterior margin roundly producing, anterior margin of pleonal epimeron 2 concave medially, prominently producing distally, ventral margin with four anterior and three medial spines, posterodistal tooth prominent, acute, posterior margin straight, with five small setae, anteroventral angle of pleonal

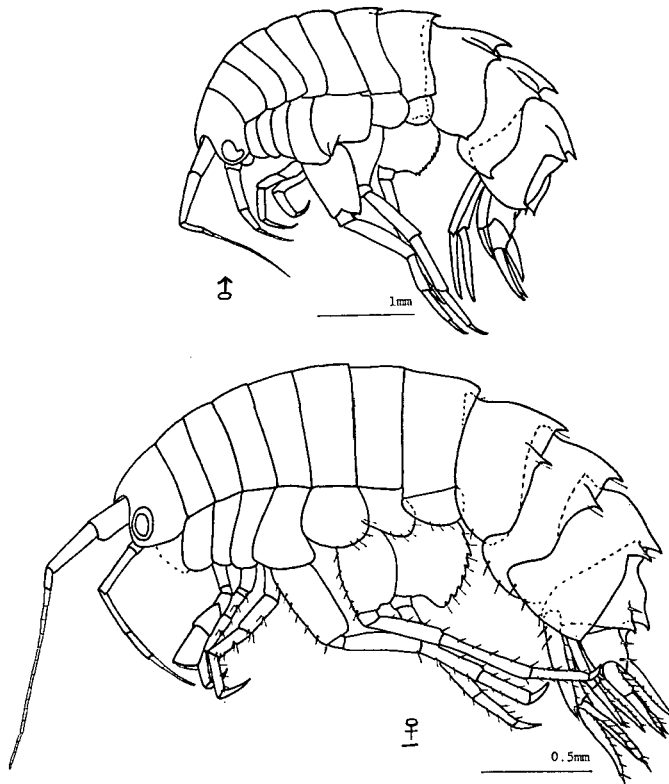


Fig. 109. *Paradexamine bisetigera* sp. nov. Holotype, male, 6.25 mm.
♀; Paratype no. 11, female, 3.75 mm.

epimeron 3 slightly producing, ventral margin rounded, elevating posteriorly, with one posteroventral tooth, else with seven spines, posterior margin slightly oblique, with six small setae. Urosome as long as pleonite 3, urosomite 1 carinate, dorsally with two lateral ridges, these three ridges acutely pointed, each lateral ridge with one spine and one seta, urosomites 2-3 coalescent, both dorsolateral ridges concave in almost right angle on anterior part and longitudinally running backward on the following one, prominently producing and acutely pointed distally, with two opposite spines on proximal part and near distal end.

Antennae: Antenna 1 about half as long as body length, peduncle rather slender, subequal to flagellum in length, peduncular segment 1 two thirds as long as head length, slightly producing dorsodistally, ventral margin with one medial stout spine and four distal plumose setae, peduncular segment 2 one and half times as long as peduncular segment 1, distinctly narrower than the latter, gradually decreasing a little in width, less setose, ventromedial margin with one pair of stout spines, peduncular segment 3 distinctly narrower than peduncular segment 2, shorter than half as long as peduncular segment 1, accessory flagellum uniarticulate, vestigial, with three small setae. Antenna 2 much shorter than antenna 1, pedun-

cular segment 1 small, supporting ventral margin of peduncular segment 2, peduncular segment 2 wider than long, gland cone prominent, stout, producing perpendicularly, peduncular segment 3 subsquare, producing on upper margin and both sides, peduncular segment 4 long, narrower than peduncular segment 3, grad-

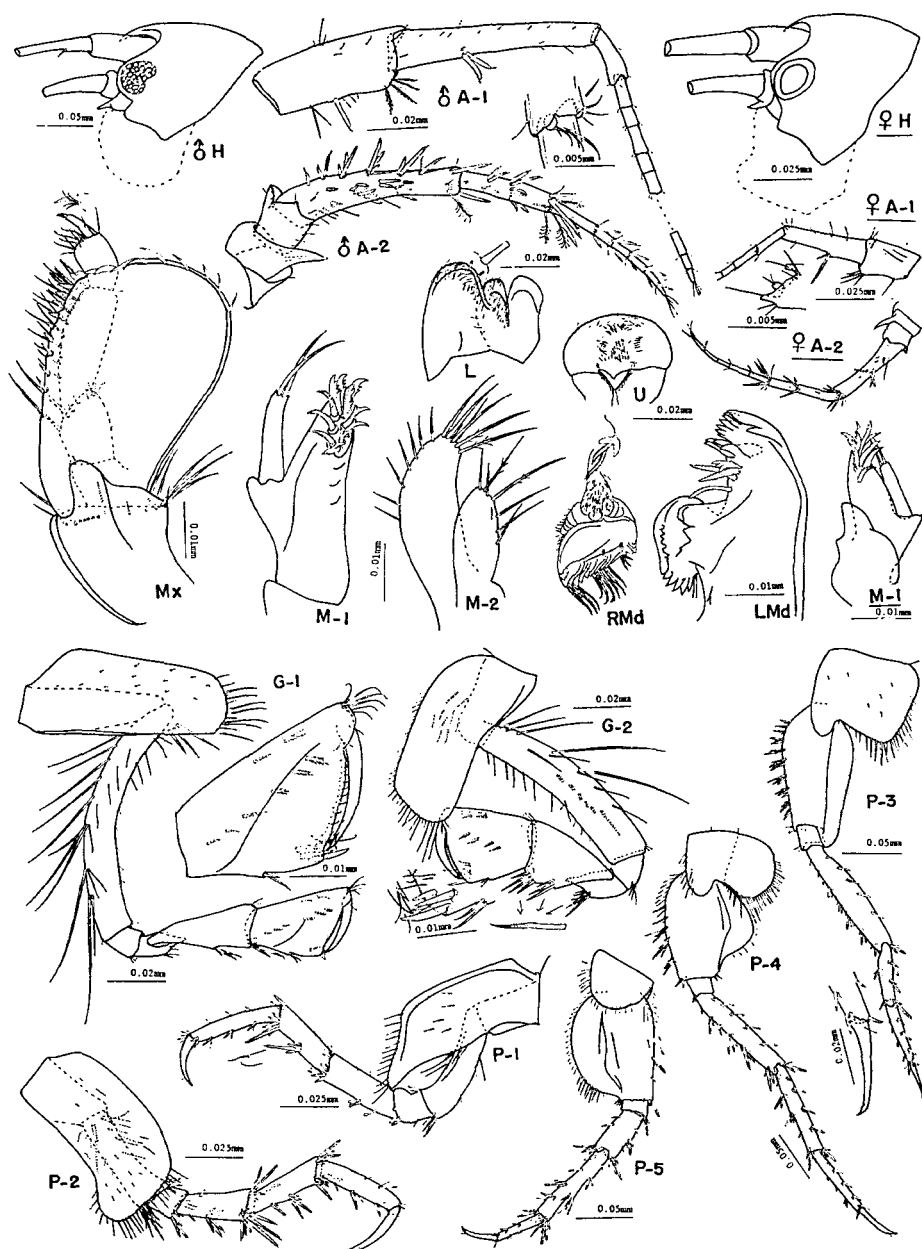


Fig. 110. *Paradexamine bisetigera* sp. nov. Holotype, male, 6.25 mm. ♀ H, ♀ A-1, ♀ A-2, M-1; Paratype no. 11, female, 3.75 mm.

ually decreasing a little in width, spiny in oblique rows, sets and singles, but ventral margin without any spine except for distal end, peduncular segment 5 about half as long as peduncular segment 4, narrower than the latter, both sides with one proximal pair of spines, one medial set of three spines, one long spine on outer distal end, and one set of two long and short spines on inner distal end, else with several distal pinnate setae, flagellum six articulate, about half as long as peduncle, distal end of proximal four segments with one pair of spines, one of segment 5 with one spine, especially proximal segment with one medial spine.

Mouthparts: Upper lip semicircular, bristly on apices. Inner plate of lower lip medium, distinctly divided, densely bristly, shoulders rounded, densely pubescent, with two spines, mandibular process weakly developed, rather medium. Inner plate of maxilla 1 medium, naked, outer plate obliquely truncate, with eight serrate tooth-like and three bifid tooth-like spines, palpal base prominently producing, palp uniarticulate, not extending beyond outer plate, truncate, with two apical simple setae. Inner plate of maxilla 2 two thirds as long as outer one, not broad, with three simple setae on inner margin, apical margin with two simple and two comparatively long setae medially armed with several minute setae, outer plate rather slender, outer margin with seven setae on distal half, apical margin with five comparatively more stout and longer setae of which some are proximally armed with several minute setae and are minutely pectinated on distal half, else with two slender setae. In left mandible, incisor with eight teeth, broad, lacinia mobilis with four teeth, one accessory tooth trilobate apically, three accessory blades finely pubescent, molar process developed, prominently producing, tritulative, serrate marginally, with many finely pinnate setae, palp absent. Right mandible very similar to left one except for having bifid accessory tooth and two accessory blades. Inner plate of maxilliped rather small, rounded apically, with only one small spine, outer plate very much developed, broad, extending beyond 2nd segment of palp, apical and inner margins with twenty-one slender and stout tooth-like spines, palp four articulate, proximal segment with one distal transverse row of four comparatively long setae, 2nd segment about half as long as palp, inner margin with single and pairing setae, else with three distal stout and pectinate setae, 3rd segment rectangular, setose on only distal margin, dactyl shorter than 3rd segment, falcate, with nail.

Gnathopod 1: Coxa 1 rectangular, twice as long as widest part, lower margin roundish, densely setose, posterior margin straight, with three spines. Gnathopod 1 slender. Basis half as long as gnathopod 1, slender, gently curved, posterior margin with five single long setae on proximal half, and three sets of two long and several short setae on following margin. Ischium short, square, with three posterodistal setae. Merus taper distally, distinctly longer than ischium, posterodistal margin with two pairs of spines. Carpus half as long as basis, gradually increasing in width, anterodistal end with two setae, posterior margin with one medial set of three spines, and four small and two longer spines on distal end. Propod as long as carpus, continuously increasing in width from carpus, anterodistal half of inner side with one

pectinate seta and one pair of pectinate setae, anterodistal end with six slender setae, central longitudinal line of inner side with five short stout setae which are pectinate except for proximal two setae, posteromedial margin with one pair of setae, palm almost transverse and straight, finely pectinate, with two opposite rows of many small setae, defined by one central stout spine and two opposite pairs of spines, else with one transverse row of four short setae near posterodistal end. Dactyl not extending beyond palm, slender, falcate, with one small tooth near apex.

Gnathopod 2: Coxa 2 similar to coxa 1, anterior and lower margins densely setose, but setae on lower margin gradually elongate. Gnathopod 2 very similar to gnathopod 1, but shorter and more stout than the latetr.

Peraeopod 1: Coxa 3 slender, extending backward on posterodistal margin, lower margin setose. Peraeopod 1 subequal to gnathopod 1 in length, slender. Basis one fourth as long as peraeopod 1, anterodistal margin curved inward, with one distal set of one spine and one seta, posterodistal end with three spines. Ischium one third as long as basis, square, posterior margin with one medial small seta and three distal spines. Merus shorter than basis, anterior margin with three distal spines. Merus shorter than basis, anterior margin with three medial small setae and five distal spines, posteroproximal half with one single spine and one pair of spines, posterodistal end surrounded by seven spines. Carpus as long as merus, slightly narrower than the latter, anterior margin with two proximal small setae and three distal spines, posterior margin with four medial spines of which one is prominently long. Propod as long as basis, distinctly narrower than carpus, anterior margin with three pairs of small setae and one distal set of four small setae, posterior margin with three sets of one spine and one seta, and one pair of locking spines. Dactyl half as long as propod, falcate.

Peraeopod 2: Coxa 4 subrectangular, extending posterodistally, lower margin and posterodistal expansion setose. Peraeopod 2 very similar to peraeopod 1 except for spinier than the latter, else dactyl slightly shorter than propod.

Peraeopod 3: Coxa 5 bilobate, anterior lobe more roundly expanding downward than posterior one, posterior lobe rectangular, lower margin with seven spines, posterior margin setose. Peraeopod 3 longer than twice as long as peraeopod 2. Basis about one third as long as peraeopod 3, anteroproximal margin rounded, following margin almost straight, with eleven sets of two to four spines, posterior thin plate narrow, slightly producing beyond ischium. Ischium short, square. Merus as long as basis, a little depressed proximally, producing on both distal ends, anterior margin with two single spines, four pairs of spines and three spines in formula, posterior margin with five spines and one apical pair of spines. Carpus half as long as merus, depressed proximally, anterior margin with one pair of spines, one single spine and one distal pair of spines, posterior margin with two pairs of spines and one distal set of four spines of which one is prominently long. Propod as long as carpus, gradually decreasing a little in width, anterior margin with five single spines, posterior margin with two single spines and two pairs of spines alternately. Dactyl two thirds as long as propod, slender.

Peraeopod 4: Coxa 6 bilobate, anterior lobe narrower than posterior one, rounded distally, anterior margin setose, posterior lobe semicircular, lower margin with eight spines which gradually elongate, posterior margin setose. Peraeopod 4 as long as peraeopod 3. Basis one fourth as long as peraeopod 4, much expanding backward medially, posterodistal margin lacking thin plate, with one distal pair of spines, anteroproximal margin rounded, setose, following margin with two single, two, four, three and three distal spines in formula. Ischium square, with one anterodistal pair of spines. Merus as long as basis, producing on both distal end, anterior margin with one, three, two, three, four and six distal spines in formula, posterior margin with five sets of one small seta and one spine, and three spines on apex of extension. Carpus shorter than merus, anterior margin with one, three, one and six distal spines in formula, posterior margin with one spine, three pairs of spines and five distal spines. Propod shorter and narrower than carpus, anterior margin with two sets of one minute seta and two spines, one set of one minute seta and two spines, and one distal set of one minute seta and one spine, posterior margin with one single spine and four pairs of spines. Dactyl about two thirds as long as propod, slender.

Peraeopod 5: Coxa 7 semicircular, setose on lower margin. Peraeopod 5 shorter than peraeopod 4. Basis one third as long as peraeopod 5, much expanding backward, anterior margin dispersively setose on proximal half, distal half with one spine, one set of two small and longer spines, one spine, and one distal set of four small and one longer spines in formula, posterior thin plate rounded, not producing distally, proximal two thirds setose, distal one third with one marginal row of eight spines and one distal set of three spines. Ischium wider than long, with one longer spine and two anterodistal opposite pairs of spines. Merus half as long as basis, producing on both distal end, anterior margin with two single spines, one medial set of four spines and one distal set of six spines, posterior margin with two single spines and one distal set of five spines. Carpus shorter than basis, anterior margin with one, three, four and eight spines, posterior margin with two single spines, two sets of four spines, and one distal set of five spines. Propod half as long as carpus, distally narrower than the latter, anterior margin with two single spines and one pair of setae, posterior margin with three pairs of spines. Dactyl two thirds as long as propod, slender.

Pleopods: Peduncle of pleopod 1 two thirds as long as rami, expanding on ventrodistal margin, both posterior margin setose, rami slender, proximal segment of outer ramus with one longitudinal row of eight short setae, inner margin of proximal segment of inner ramus with three bifid and one simple setae, terminal setae about one third as long as rami.

Uropods: Uropod 1 extending beyond uropods 2-3, peduncle as long as rami, outer ventroproximal margin with three spines, both upper margins extending, taper, outer margin with nine medial and one apical spines, inner margin with three spines, six setae and one apical spine, both rami equal to each other in length, similar to each other, apices bifid, with one stout spine on the concavity, else outer

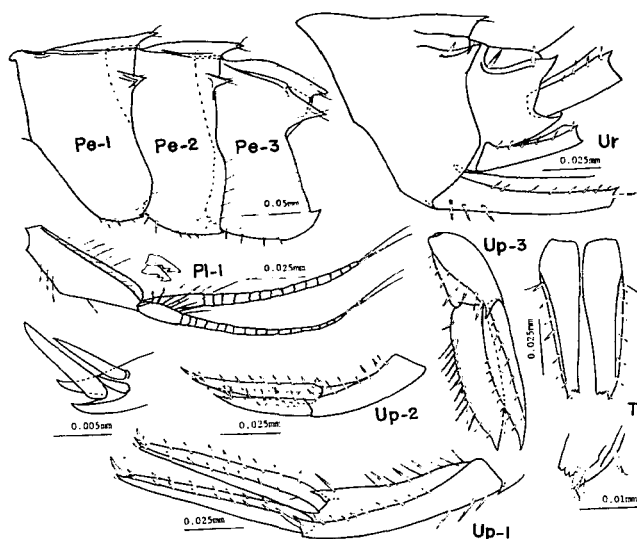


Fig. 111. *Paradexamine bisetigera* sp. nov. Holotype, male, 6.25 mm.

ramus with eight pairs of spines, inner ramus with nine pairs of spines. Uropod 2 not extending beyond uropod 3, peduncle as long as inner ramus, upper margin extending apically, taper, with seven spines on outer margin and one spine on inner one, both rami bifid apically, apical concavity with one stout spine, outer ramus shorter than inner one, with one pair of spines near apex, else with four spines on outer margin and six spines on inner one, inner ramus with eight spines on outer margin and seven spines on inner one. Uropod 3 stout, peduncle half as long as rami, producing on both margins of upper distal end, with five spines on outer margin, and two small setae and three spines on inner one, rami equal to each other in length, foliaceous, broad, taper, outer ramus with seven spines on outer margin and eight spines on inner one, outer margin of inner ramus with six spines, inner margin with one proximal single spine, ten sets of one spine and one pinnate seta, and two distal single spines.

Telson: Telson elongate, but not extending beyond uropod 3, thoroughly cleft, truncate, both apices serrate, with one spine on outer distal end respectively, outer submargin ridged, outer margin with one proximal set of one seta and one spine, and five or six single spines.

Material examined. Holotype: Male, 6.25 mm. Type-locality: Tomioka Bay. Date: May, 1978. Paratype: 19 specimens. Collection No.: AMBL-Amph. 74, 75.

Remarks: The present species is similar to *Paradexamine windarra* (J.L. Barnard 1972a), *P. muriwai* (J.L. Barnard 1972a) and *P. quarallia* (J.L. Barnard 1972a) but is clearly distinguished from them by the outer plate of maxilliped extending beyond the palp and the base of pereopod 5 broad posterodistally.

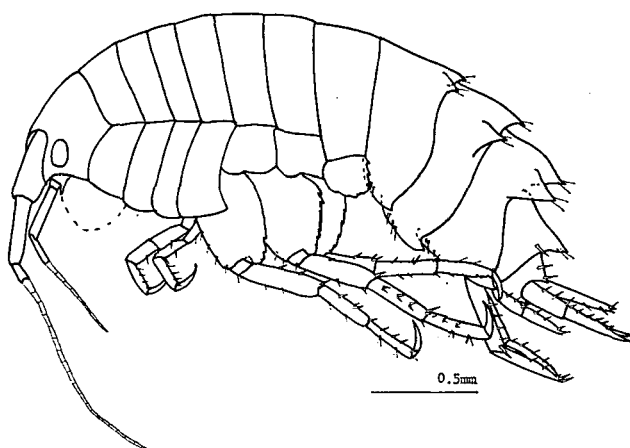
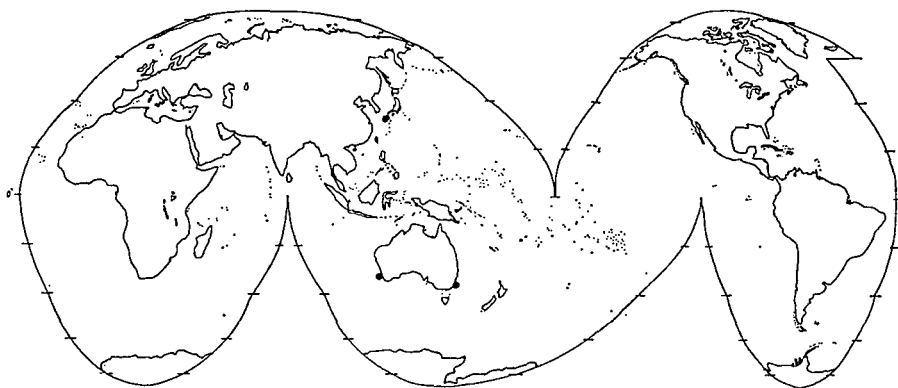
Paradexamine marlie J.L. Barnard, 1972

(Fig. 112–115)

P. marlie: J.L. Barnard 1972a, p. 105–110.

Material examined: Female, 3.5 mm. Tomioka Bay. Collection No.: AMBL-Amph. 77. (8 specimens).

Body: Rostrum of head prominently producing, superior antennal sinus deeply concave, anterior head lobe prominently producing to distal one third of peduncular segment 1, taper. Eyes rather small, circular, placing on anterior head lobe, central part darkish. Dorsoventral end of each pleonite with three teeth, anterior margin of pleonal epimeron 1 rounded, with one pair of spines and one oblique row of six spines, posteroventral end with one acute tooth, posterior margin prominently expanding medially, anteroventral end of pleonal epimeron 2 producing and rounded, anterior half of lower part with two, four and six spines in oblique rows

Fig. 112. *Paradexamine marlie* J.L. Barnard. Female, 3.5 mm.Fig. 113. Distribution of *Paradexamine marlie* J.L. Barnard (●) in the world.

in formula, posteroventral tooth stout and acute, posterior margin slightly expanding medially, pleonal epimeron 3 similar to pleonal epimeron 2, but broader than the latter, anterior half of ventral margin with four single spines and two oblique rows of three spines, posteroventral tooth prominent, larger and longer than one of pleonal epimeron 2. Back of urosomite 1 distinctly concave medially, carinate on posterior half, its ridge gradually elevating, extending backward, taper, with one distal pair of small setae, its posteroventral base with one pair of spines, urosomites 2-3 coalescent, about two thirds as long as dorsal length of urosomite 1, ridges on both dorso-lateral sides producing and taper distally, with two medial and distal pairs of spines.

Antennae: Antenna 1 longer than half as long as body length, peduncular segment 1 subequal to head length exclusive of rostrum in length, most expanding near ventrodistal end, its expansion with four spines, else ventral margin with one medial set of three setae and one spine, and four distal setae, peduncular segment 2 slightly longer than peduncular segment 1, subequal to half as broad as expansion of peduncular segment 1, distal end densely setose, peduncular segment 3 one third as long as peduncular segment 2, narrower than the latter, both distal ends with three setae respectively, accessory flagellum uniarticulate, vestigial, with three apical setae, proximal segment of main flagellum about half as long as peduncular segment 2, following segments with one distal aesthetasc except for terminal segment. Antenna 2 three fifths as long as antenna 1, peduncular segment 1 stout, peduncular segment 2 small, gland cone small, but prominently producing, peduncular segment 3 short, producing on upper distal end, peduncular segment 4 narrower than peduncular segment 3, about two thirds as long as peduncular segment 2 of antenna 1, with three and five setae on medial margin of both sides, else with several setae on distal end, peduncular segment 5 three fourths as long as peduncular segment 4, narrower than the latter, surrounded by many setae distally, else with two and three setae on both medial margins.

Mouthparts: Upper lip semicircular, densely bristly on upper margin. Inner plate of lower lip distinctly separate, densely bristly, inner margin of outer plate with two gland cones, densely bristly, shoulders rounded, densely bristly, mandibular process small. Inner plate of maxilla 1 small, rounded, with one apical pinnate seta, outer plate with five attenuate teeth pectinated in longitudinal rows, two bifid teeth and four teeth armed with two to four stout teeth, palpal base large, prominently expanding, slightly producing on distal end, with two distal setae, palp broad, slightly dilating and rounded on distal margin, extending beyond outer plate, with seven apical setae. Both plates of maxilla 2 rather slender, rounded apically, inner plate shorter than outer one, inner margin with two single setae and one pair of setae, apical margin with one single seta and three pairs of setae, these setae armed with several setae proximally, both margins of outer plate with four setae respectively, apical margin with three pairs of setae and one single seta. Mandibles lacking palp, comparatively similar to each other, incisor well developed, broad, with five stout teeth, lacinia mobilis composing of two parts, upper part with seven teeth on right mandible and four teeth on left one, lower part with five teeth, molar pro-

cess very large, truncate, lacking rasp, with one stout seta in left mandible and twelve slender setae in right one, lower part serrate. Inner plate of maxilliped narrow, not extending beyond proximal segment of palp, apex with one small seta and three longer setae pectinated on distal half, outer plate broad, but rather slender, extending beyond palp, outer margin rounded, with five setae, inner margin crenulate,

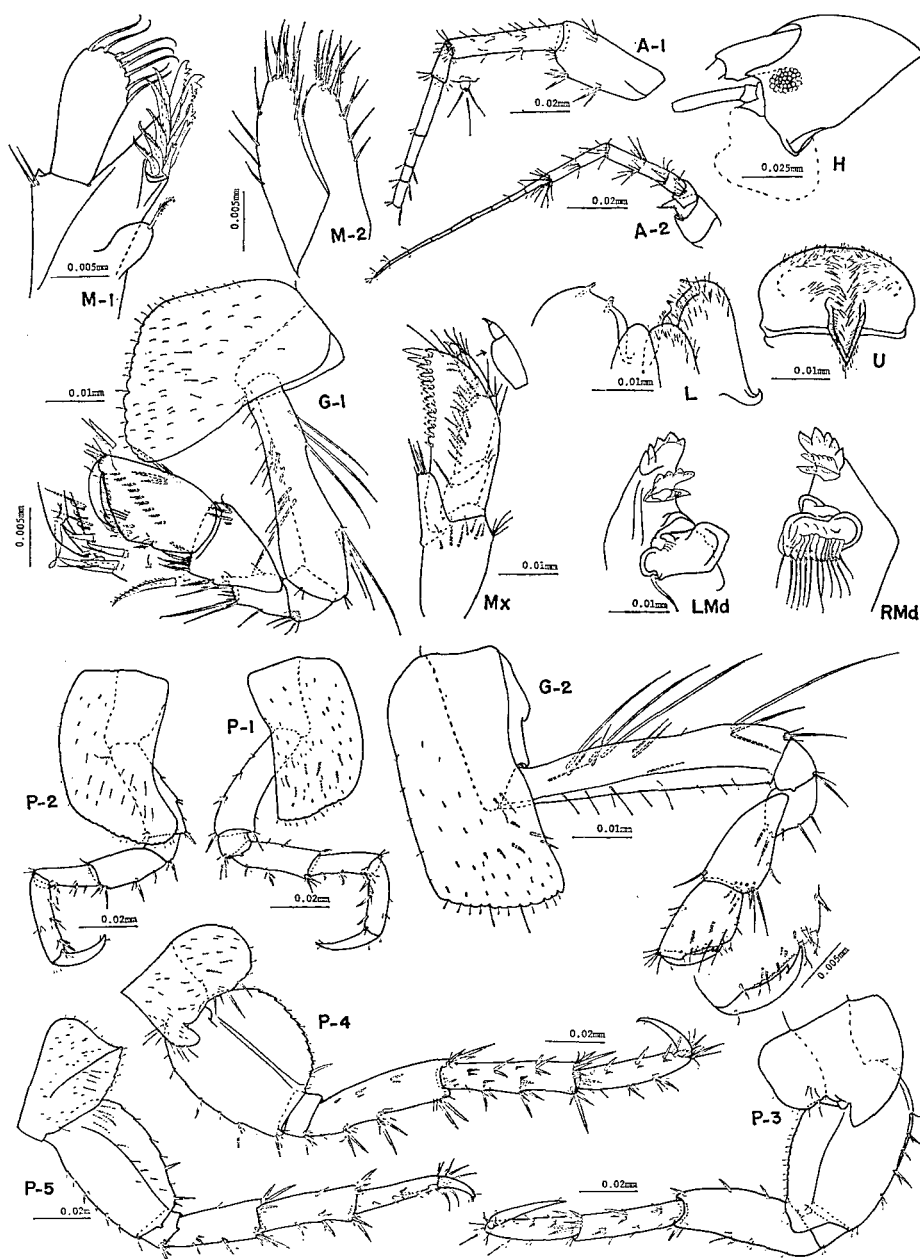


Fig. 114. *Paradexamine marlie* J.L. Barnard. Female, 3.5 mm.

with twelve conical teeth which gradually elongate, palp four articulate, slender, proximal two segments of palp two thirds as long as palp, inner margin of 2nd segment not densely setose, 3rd segment narrower than 2nd one, about half as long as the latter, slightly dilating at distal one third, inner distal one third setose in rows, dactyl small, with nail.

Gnathopod 1: Coxa 1 gradually expanding and extending downward and backward, dispersively bristly, lower margin minutely crenulate, with many small setae. Basis about half as long as gnathopod 1, producing on outer distal end, inner side of anterior margin with six medial long setae, outer side of anterior margin with several small setae, posterior margin with three proximal long setae, one set of three long and one small setae at distal one third, and one distal pair of small setae. Ischium short, rectangular, posterior margin as long as wide, twice as long as anterior one, with one distal row of five short setae. Merus longer than posterior margin of ischium, truncate, slightly producing anterodistally, anterior free margin very narrow, posterior margin with one medial seta, distal end with three long and five short setae. Carpus triangular, as long as ischium and merus combined, anterodistal end with one transverse row of four pinnate setae, proximal half of posterior margin fitting on ischium, following margin with one set of one small simple and one pinnate setae, its distal end surrounded by several pinnate setae and one spine. Propod about half as long as basis, weakly expanding, outer submargin of inner side with one transverse row of four stout pinnate setae, else inner side with one oblique row of nine pinnate spines, posterior margin with two pinnate and several small simple setae, palm oblique, finely serrate, defined by semicircular row of six spines, with several small setae. Dactyl reaching palmar spines, falcate, stout, hooded, with one stout tooth and one small seta near apex.

Gnathopod 2: Coxa 2 rectangular, deeper than coxa 1, dispersively bristly, with several spines on inner medial margin, lower margin slightly roundish, finely crenulate, with many small setae. Gnathopod 2 longer and slenderer than gnathopod 1. Basis about half as long as gnathopod 2, anterior margin with several short setae, posterior proximal half with three long and five shorter setae, else with one set of one long and two shorter setae, and one distal set of two short and one longer setae. Ischium short, posterior margin as long as wide, twice as long as anterior one, with three distal setae. Merus longer than ischium, anterior free margin short, distal margin free, with five setae. Carpus shorter than half as long as basis, triangular, anterodistal end with two setae, posterior margin with one medial setae, its distal end surrounded by seven setae. Propod distinctly shorter than carpus, weakly expanding, anteromedial submargin with one pair of setae and one single seta, anterodistal end with five setae, else inner side with two pectinate spines, posterior margin with one pectinate spine near distal end, palm oblique, almost straight, finely serrate, defined by three spines, with three comparatively long setae on outer margin, two small setae and one distal spine. Dactyl reaching palmar spines, falcate, hooded, with one tooth near apex.

Praeopod 1: Coxa 3 similar to coxa 2 in shape, larger than the latter, lacking

spine. Basis about two sevenths as long as pereopod 1, slightly curved distally, anterodistal end with one spine and one small seta, posterior margin with three medial sets of one spine and one or two small setae, and one distal set of two spines and two small setae. Ischium short, subsquare, slightly wider than long, posterodistal end with two spines and four small setae. Merus about two thirds as long as basis, anterior margin with one small seta, one set of one spine and one small seta, and one distal set of one spine and one small seta, posteroproximal half with two sets of two and three spines, posterodistal end with five spines. Carpus half as long as basis, distinctly narrower than merus, posterior margin with one spine, one set of three spines and one small seta, and one distal set of one long stout and two pairing small spines. Propod as long as merus, as broad as carpus, anterior margin with one, three and four distal small setae in formula, posterior margin with three sets of one spine and one or two setae, and one pair of locking spines. Dactyl as long as carpus, stout, falcate.

Pereopod 2: Coxa 4 similar to coxa 3, but extending backward, dispersively bristly, posterodistal and lower margins finely crenulate, setose. Pereopod 2 similar to pereopod 3 except for a number of spines and setae.

Pereopod 3: Coxa 5 bilobate, anterior margin rounded, anterodistal end slightly extending backward, posterior lobe subrectangular, lower margin with one spine and several small setae. Basis about two sevenths as long as pereopod 3, anteroproximal margin rounded, with one spine and one pair of spines, following margin roundish, with one set of one spine and one small seta, three spines, one set of one spine and one small seta, one set of two spines and one small seta, two spines and two distal small setae, posterior thin plate not rounded, half as broad as anterior muscular part, finely crenulate, extending beyond ischium. Ischium short, wider than long, with three anterodistal small setae. Merus shorter than basis, gradually expanding a little backward on proximal margin, producing on both distal ends, anterior margin with several medial setae and four distal spines, posterior margin with four spines, and one distal set of one spine and one small seta. Carpus three fourths as long as merus, half as broad as widest part of merus, posterior margin with one set of two spines and one small seta, one set of three spines and one small seta, and four distal spines, anterior margin with one, three, two and three small setae in formula, anterodistal end with three small setae and three spines. Propod shorter and narrower than carpus, posterior margin with two pairs of spines, one single spine and one pair of locking spines, anterodistal half with one pair of small setae, one set of one short and two small setae, and one distal set of six small setae. Dactyl slightly shorter than propod, falcate.

Pereopod 4: Coxa 6 bilobate, dispersively bristly, anterior lobe narrow, anterior margin of distal extension rounded, with four spines, posterior lobe much expanding backward, rectangular, rounded on posterodistal margin, posterior half of lower margin with four spines, posterior margin with four small setae. Basis one fourth as long as pereopod 4, anterior margin roundish, with four short setae, one small seta, one pair of spines, one spine, two spines, one spine, three spines, one

small seta, and one set of three spines and one seta in formula, posterior thin plate nearly semicircular, not extending distally, serrate marginally, with one spine near distal end. Ischium rectangular, twice as broad as long, anterodistal end with four spines and two small setae. Merus subequal to basis in length, producing on both distal ends, anterior margin with one small seta, one set of four spines and two small setae, one set of seven spines and two small setae, and one distal set of about eight spines and three small setae, posterior margin with one spine, one set of one spine and one small seta, one pair of spines, and one distal set of five spines and one small seta. Carpus as long as and narrower than merus, anterior margin with one small seta, one set of five spines, one set of seven spines, and one distal set of eight spines and one seta, posterior margin with two pairs of spines, one spine, one set of four spines, and one distal set of six spines and one seta. Propod shorter and narrower than carpus, anterior free margin with one, three and five setae in formula, anterodistal end surrounded by four stout and about five slender setae, posterior margin with one spine, three pairs of one small and one longer spines, and one pair of locking spines. Dactyl about half as long as propod, falcate.

Peraeopod 5: Coxa 7 subrectangular, dispersively bristly, posterior margin about twice as long as anterior one, gently sinuous, taper distally, with several small setae, lower margin roundish, serrate, armed with several setae on posterior half. Basis about one third as long as peraeopod 5, rectangular, anterior margin with six single spines, and one distal set of two spines and one small seta, posterior thin plate most expanding proximally, but rather slender, gradually narrowing a little, with five proximal short setae in one transverse row and one longitudinal row of five small setae near anterior margin of inner side, posterior margin with four minute teeth armed with one small seta, and four small setae on proximal two thirds, else with three spines on distal one third. Ischium rectangular, about twice as wide as long, anterodistal end with four spines and one small seta. Merus two thirds as long as basis, producing posterodistally, anterior margin with two transverse rows of three spines, and one distal row of six spines, posterior margin with one medial spine, distal extension with four spines and one small seta. Carpus as long as ischium and merus combined, anterior margin with one pair of spines, one transverse row of five spines, and one distal row of seven spines, posterior margin with one medial spine and one distal row of six spines. Propod slightly shorter and narrower than carpus, anterior margin with one spine, two pairs of spines and one medial set of three spines, and one distal set of six stout and three slender setae. Dactyl about half as long as carpus, falcate.

Uropods: Uropod 1 not extending beyond uropod 3, peduncle slightly shorter than inner ramus, outer lateral side with one proximal oblique row of two spines and one apical long stout spine, upper margin prominently producing distally, with five spines on outer margin and four spines on inner one, both rami finely pectinate marginally, bifid apically, with one stout spine on apical concavity and one pair of spines near it, outer ramus distinctly shorter than inner one, with two spines on outer margin and one spine on inner one, inner ramus with three spines on outer

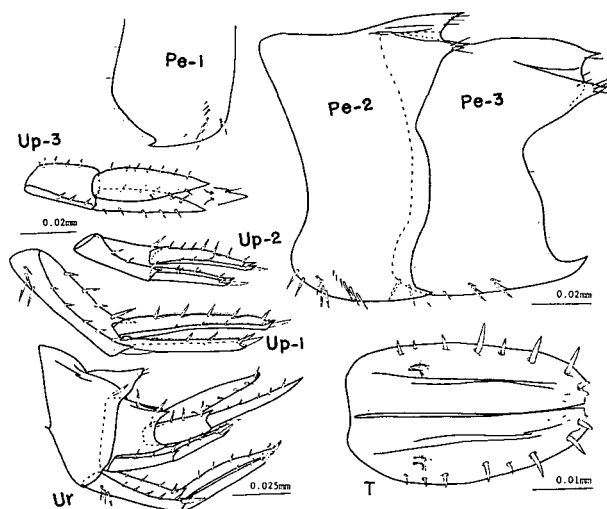


Fig. 115. *Paradexamine marlie* J.L. Barnard. Female, 3.5 mm.

margin and four spines on inner one. Uropod 2 longer than half as long as uropod 1, peduncle as long as outer ramus, producing on both distal ends, with three spines on outer margin and one distal spine on inner one, apices of both rami similar to those of uropod 1, outer ramus distinctly shorter than inner one, with two pairs of spines, inner ramus with three spines on outer margin and six spines on inner one. Uropod 3 subequal to uropod 2 in length, peduncle longer than half as long as rami, producing on outer distal end, with four spines on outer margin, and four spines and one small seta on inner one, rami equal to each other in length, foliaceous, attenuate and taper, with one small seta near inner apex respectively, both margins of outer ramus with five spines respectively, inner ramus with three spines on distal half of outer margin and seven spines on inner margin.

Telson: Telson longer than half as long as uropod 3, thoroughly cleft, long oval, truncate and serrate apically, each lobe ridged on central line, with seven marginal spines and one spical spine, else with one proximal pair of small pinnate setae.

Remarks. The specimens at hand agree with *P. marlie* (J.L. Barnard 1972a) except for the following triffling differences; (1) inner plate of maxilliped with two or three facial setae, (2) palmar defining spines of gnathopod 1 three, (3) pleonal epimera less setose and difference in arrangement of spines, (4) uropod 3 less setose, and (5) serration of telson more distinct.

Paradexamine micronesica Ledoyer, 1978

(Fig. 116–119)

P. micronesica: Ledoyer 1978b, p. 262.

Material examined: Male (?), 3.0 mm. Tomioka Bay. Collection No.: AMBL-Amph. 76.

(5 specimens).

Body: Head as long as peraeonites 1-2 combined, rostrum decurved, very short, taper, anterior head lobe much producing, slightly curved downward apically, reaching about proximal two thirds of peduncular segment 1 of antenna 1. Eyes large, central part darkish, periphery orange in alcohol. Peraeonites 1-7 gradually making deeper a little, coxae relatively shallow. Pleonites 1-2 as long as peraeonites 1-2 combined in dorsal length, pleonite 3 longer than pleonite 2, dorsoventral end of each pleonite with three prominent teeth, anterior and ventral margin of pleonal epimeron 1 continuously rounded, anteroventral margin with three spines, posteroventral tooth small, anteroventral angle of pleonal epimeron 2 slightly producing forward, rounded, anteroventral submargin with one oblique row of six spines, else with one spine, posteroventral tooth prominently acute, anteroventral margin of pleonal epimeron 3 slightly producing, lower margin roundish, distal half with three single spines and one oblique row of three spines, posteroventral tooth prominently producing, but not upturned. Urosome one and half times as long as pleonite 3 in dorsal length, urosomite 1 as long as urosomites 2-3 combined, prominently carinate,

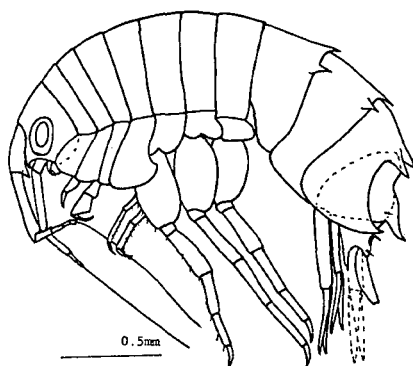


Fig. 116. *Paradexamine micronesica* Ledoyer. Male (?), 3.0 mm.

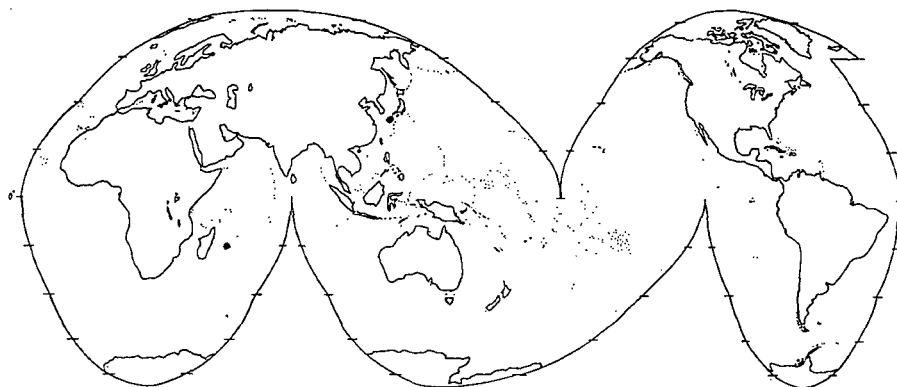


Fig. 117. Distribution of *Paradexamine micronesica* Ledoyer (●) in the world.

its ridge extending and upturned above urosomites 2-3, with one pair of spines on posterodistal base, urosomites 2-3 coalescent, ridges on posterior half of back, two opposite ridges extending and pointed, with two anterior and medial spines respectively.

Mouthparts: Apical margin of upper lip roundish, broad, finely bristly. Inner plate of lower lip distinctly divided, medium, densely bristly, inner margin of inner plate bristly, with one distal spine, shoulders roundish, broad, mandibular process weakly developed, rather short, broad. Inner plate of maxilla 1 small, with one apical small seta, outer plate with nine bifid teeth armed with seven teeth, palmar base prominently expanding, extending upward on outer distal end, palp uniarticulate, extending beyond outer plate, rounded apically, with five distal long setae. Both plates of maxilla 2 rather slender, inner plate a little shorter and narrower than outer one, truncate, only apical margin with four stout setae, outer plate truncate, apical margin with two pairs of setae and three single setae, outer distal half with two setae. Both mandibles lacking palp and accessory setae and spines, incisor not producing forward, but rised, stout and broad, with five teeth, lacinia mobilis stout, semicircular, with three teeth on left mandible and smooth on right one, molar process large, not prominently producing, lacking rasp, but shrivel, with five unsegmental teeth. Inner plate of maxilliped vestigial, with two apical stout setae, outer plate large, much developed, but rather slender, extending far beyond 3rd segment of palp, long oval, inner margin with two proximal setae and eleven conical spines of which distal one is stout and large, palp four articulate, rather slender, 2nd segment about half as long as palp, inner margin not densely setose, proximal and 3rd segments equal to each other in length, about one third as long as 2nd segment, inner distal half of 3rd segment setose, dactyl shorter than 3rd segment, falcate.

Gnathopod 1: Coxa 1 gradually widening downward, lower margin with eleven short setae. Basis three sevenths as long as gnathopod 1, anterior margin with ten short setae, anterior submargin with five long setae, posterior margin with one proximal long seta and one medial pair of long setae. Ischium short, square, posterodistal end with one pair of setae. Merus about twice as long as ischium, taper distally, anterior free margin narrow, posterior margin with one medial short seta, and several distal short and longer setae. Carpus half as long as basis, gradually increasing in width, anterior margin with two medial pairs of setae on each side and three distal setae, posterodistal half with one pair of setae, three and six distal pectinate setae. Propod as long as merus and carpus combined, almost uniform in width, inner side with two and three setae on anterior submargin, one central oblique row of four setae, and four setae on posteromedial margin, anterodistal end surrounded by six short setae, palm oblique, finely serrate, defined by three spines, with about eight small setae curved distally. Dactyl fitting on palm, falcate, hooded, grasping margin with one tooth near apex.

Gnathopod 2: Coxa 2 rectangular, deep, lower margin gradually extending downward, with eight small setae, posterior margin with one medial small setae and one spine at distal one third. Gnathopod 2 longer than gnathopod 1. Basis

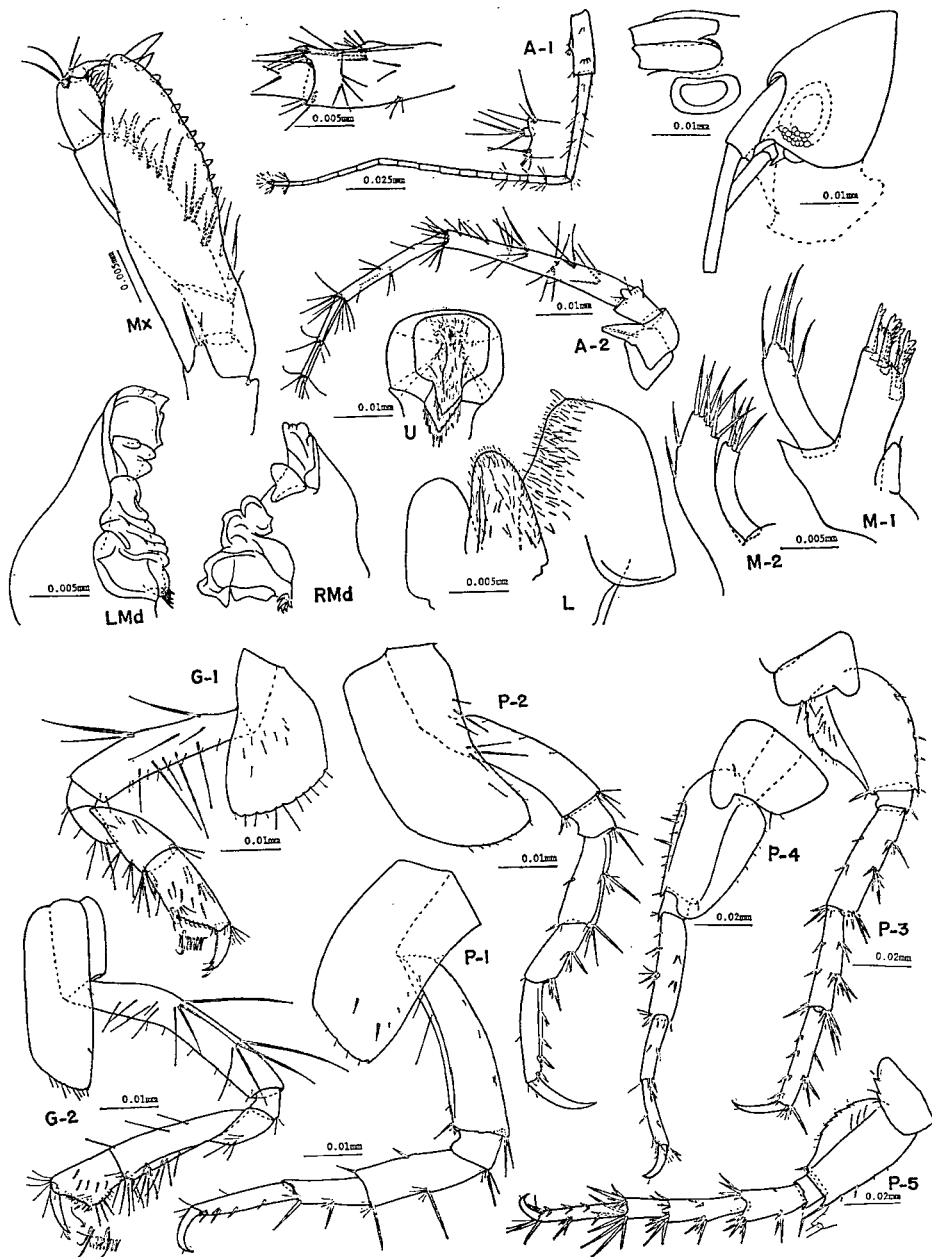


Fig. 118. *Paradexamine micronesica* Ledoyer. Male (?), 3.0 mm.

shorter than half as long as gnathopod 2, slightly curved downward at proximal one third, anterior margin with seven small setae, posterior margin with two transverse rows of four long setae, else proximal one third with five short setae on outer central part. Ischium short, subsquare, posterodistal end with one pair of setae. Merus twice as long as ischium, taper, anterior free margin narrow, posterodistal

margin with one row of five setae. Carpus two thirds as long as basis, gradually increasing a little in width, anterior margin with two medial short and one distal short setae, posterodistal half with one, three and six plus two distal setae in formula. Propod about half as long as carpus, gradually widening a little, especially posterodistal half expanding a little, with three small simple and three pinnate setae, inner side with one oblique row of four setae, palm oblique, defined by four spines, finely serrate, with two opposite rows of several setae.

Peraeopod 1: Coxa 3 deeper than coxa 2, rectangular, posterior submargin with four small setae, lower margin with five small setae and one small tooth posterodistally, else lower part with two spines. Basis two fifths as long as peraeopod 1, posterodistal end with two short and one small setae, anterodistal end with one spine and three small setae. Ischium short, wider than long, posterodistal end with one small stiff and four setae. Merus two thirds as long as basis, uniform in width, anterior margin with two medial and distal spines, posterior margin with two sets of one stiff spine and four short setae. Carpus two thirds as long as merus, distinctly narrower than merus, prominently producing on anterodistal end, posterior margin with two sets of two stiff spines and two or three small setae. Propod shorter than merus, distinctly narrower than carpus, anterior margin with one medial small and a few distal small setae, posterior margin with two single spines and two pairs of spines. Dactyl about half as long as propod, slender, falcate.

Peraeopod 2: Coxa 4 very similar to coxa 3, but more extending backward on posterodistal margin, lacking spines. Peraeopod 2 very similar to peraeopod 1 except for posterior margin of merus with three medial and two distal spines, and posteromedial margin of carpus with three spines.

Peraeopod 3: Coxa 5 bilobate, anterior lobe narrow, deeper than posterior one, rounded on lower margin, posterior lobe rectangular, about twice as wide as anterior one, lower margin with one distal spine. Basis about one third as long as peraeopod 3, rather less expanding anteroproximal margin rounded, with one proximal spine, following margin thick, with nine spines, anterodistal end with one tooth and one spine, posterior thin plate narrow, gradually decreasing in width, extending to distal end of ischium. Ischium narrow, wider than long, with one anterodistal acute tooth. Merus shorter than basis, almost uniform in width, slightly producing distally, anterior margin with one spine, one set of one spine and two setae, one set of two spines and two setae, and one distal set of two spines and two setae, posterior margin with two pairs of spines. Carpus two thirds as long as and narrower than merus, anterior margin with one medial and three distal spines, posterior margin with one medial seta and one distal spine. Propod as long as carpus, slightly narrower than carpus, anterior margin with two medial and distal spines, posterior margin with two single spines and one pair of locking spines. Dactyl half as long as propod, slender, falcate.

Peraeopod 4: Coxa 6 similar to coxa 5, larger than the latter, lower margin of posterior lobe with two spines. Basis about one third as long as peraeopod 4, most expanding on posteroproximal margin, anterior margin rounded, with six

spines and one distal small tooth, posterior thin plate most expanding proximally, remarkably decreasing in width on following part, with three teeth, posterodistal end with two spines. Ischium narrow, wider than long, with one spine, three small setae and one small tooth. Merus slightly shorter than basis, almost uniform in width, slightly producing posterodistally, anterior margin with four and five spines in sets medially, and one distal set of two pairing spines and six short spines, posterior margin with one, two and three distal spines in formula. Carpus shorter and narrower than merus, anterior margin with three, seven and six distal spines in formula, posterior margin with two pairs of spines and three distal spines. Propod as long as and narrower than carpus, anterior margin with one set of two small and long spines, one set of four spines, and one distal set of two small and long spines and four small setae, posterior margin with five pairs of spines. Dactyl about half as long as propod, slender, falcate.

Peraeopod 5: Coxa 7 semioval, lower part of posterior margin distinctly serrate, with four spines. Peraeopod 5 very similar to peraeopod 4. Basis most expanding backward medially, not extending posterodistally, anterior margin with three proximal small setae and two distal spines, distal end distinctly producing, with one spine, posteromedial margin serrate, with several setae. Ischium short, wider than long, producing anterodistally, its extension with one apical spine. Merus about half as long as carpus, a little producing on both distal ends, anterior margin with three medial and eight distal spines, posterior margin with one medial and four distal spines. Carpus as long as basis, slightly narrower than merus, anterior margin with two medial sets of six spines, and seven distal spines, posterior margin with two, four and six spines in formula. Propod two thirds as long as and narrower than carpus, anterior margin with one spine, one set of five spines, and one distal set of two spines and two setae, posterior margin with four pairs of spines.

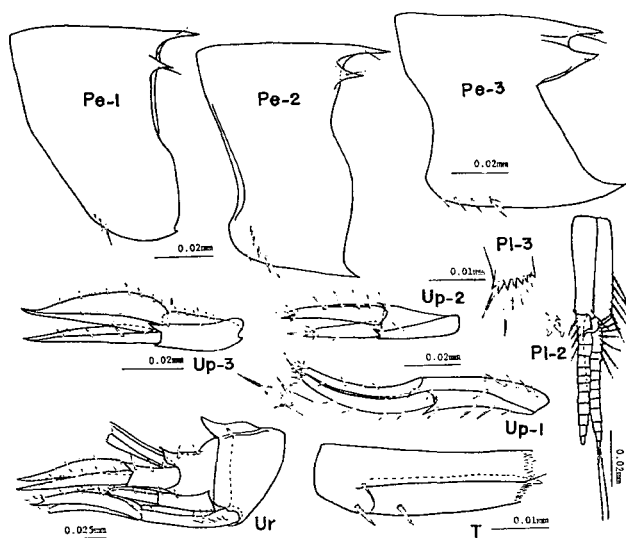


Fig. 119. *Paradoxamine micronesica* Ledoyer. Male (?), 3.0 mm.

Dactyl similar to one of pereopod 4.

Pleopods: Peduncle of pleopod 2 shorter than rami, outer distal half with five pinnate setae, proximal segment with eight pinnate setae on outer ramus, with three bifid and one normal pinnate setae on inner ramus, terminal swimming setae two thirds as long as rami. Distal end of peduncle on pleopod 3 serrate, with six spines.

Uropods: Uropod 1 not extending beyond uropod 3, peduncle as long as rami, proximal half of outer side with five spines, both upper distal ends distinctly producing and taper, outer margin with one medial spine, one distal spine, and one long stout spine near apex, inner margin with three spines on proximal half and one spine near apex, both rami equal to each other in length, finely pectinate marginally, bifid apically, concavity of both apices with one long spine, one pair of spines growing near concavity, else outer ramus with three spines on outer margin and one spine on inner distal margin, inner ramus with four spines on inner margin. Uropod 2 two thirds as long as uropod 1, peduncle as long as outer ramus, producing and taper on both distal ends, outer margin with two spines, inner margin with one distal spine, apex of both rami similar to one of uropod 1, outer ramus distinctly shorter than inner one, with two spines on outer medial margin, inner ramus with four spines on inner margin. Uropod 3 shorter than uropod 1, peduncle slightly longer than half as long as rami, producing and taper on outer distal end, outer margin with three spines, inner margin with four spines, rami equal to each other in length, foliaceous, taper, finely pectinate, outer ramus with four spines on outer margin and two spines on inner one, inner ramus with one spine on outer margin and seven spines on inner one.

Telson: Telson half as long as uropod 3, rectangular, thoroughly cleft, truncate, distinctly serrate apically, each lobe ridged on central longitudinal line, with one spine on distal end of the ridge and one seta on its proximal part, else with two spines on outer proximal margin.

Remarks. The specimens at hand well agree with *P. micronesica* (Ledoyer 1978b) except for the telson with one spine on the outer proximal margin of each lobe.

Paradexamine gigas sp. nov.

(Fig. 120–121)

Body: Back of head roundish, rostrum decurved, short, triangular, taper, anterior head lobe prominently producing beyond middle of peduncular segment 1 of antenna 1, taper, inferior antennal sinus straight downward. Eyes very large, oval, occupying more than half of face, major central part darkish. Peraeon and pleonal epimera similar to those of *P. barnardi* (Sheard 1938, Nagata 1965c), dorso-ventral end of pleonites 1–3 with three teeth respectively, but lateral teeth of pleonites 1–2 small, pleonal epimeron 1 subrectangular, posterior margin expanding medially, ventral margin with three anterior spines, anteroventral margin of pleonal epimeron 2

prominently producing, rounded, posteroventral end with one small tooth, anterior part with one oblique row of ten spines, else with one single spine, pleonal epimeron 3 very similar to pleonal epimeron 2, but posteroventral tooth large, ventral margin with four anterior spines and two medial pairs of spines. Urosome similar to one of *P. barnardi* (Sheard 1938), ridge on urosomite 1 with two opposite spines on medial

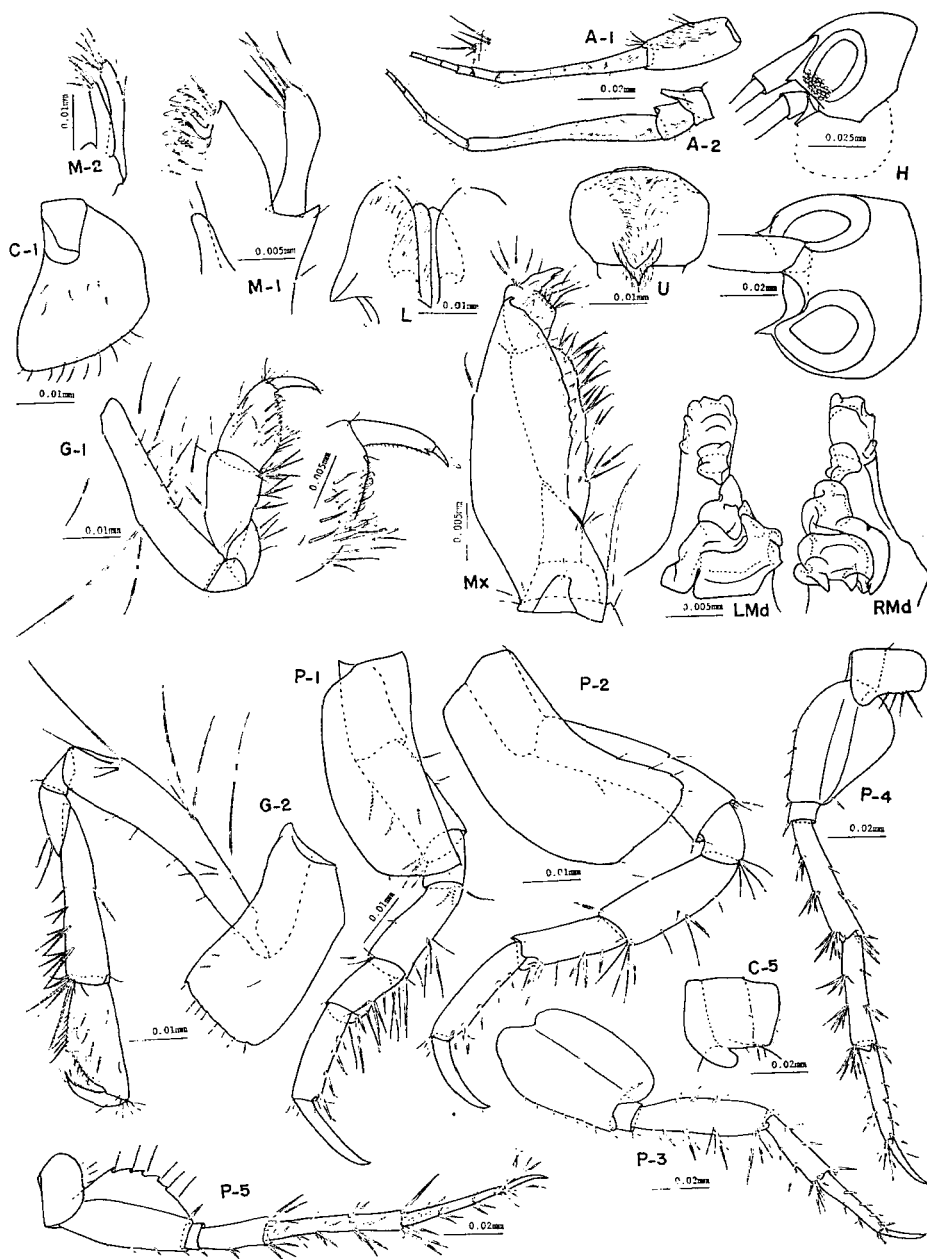


Fig. 120. *Paradexamine gigas* sp. nov. Holotype, male, 3.5 mm.

base, with two pairs of setae posteroventrally, urosomites 2-3 coalescent, with two opposite spines on medial margin of back.

Antennae: Both antennae long. Peduncular segment 1 of antenna 1 stubby, shorter than dorsal length of head, bristly in rows on ventral margin, else ventral margin with one medial pair of setae and three distal setae, peduncular segment 2 very slender, gradually decreasing in thickness, one and half times as long as peduncular segment 1, dispersively with sets of three or two setae and some single setae, peduncular segment 3 about one fifth as long as peduncular segment 2, accessory flagellum uniarticulate, vestigial, with three apical small setae. Peduncular segment 2 of antenna 2 broader than long, with one prominent gland cone, peduncular segment 3 about twice as long as peduncular segment 2, bristly in transverse rows, peduncular segment 4 prominently longer than peduncular segment 2 of antenna 1, gradually decreasing in thickness, not densely bristly in transverse rows, peduncular segment 5 shorter than one third as long as peduncular segment 4, distinctly narrower than peduncular segment 4, distal end oblique, article 1 of flagellum subequal to peduncular segment 5 in length, narrower than the latter.

Mouthparts: Apical margin of upper lip broad, rounded, densely bristly. Inner plates of lower lip distinctly divided, medium, densely bristly, outer plate densely pubescent on inner margin and shoulders, shoulders with one gland cone respectively, mandibular process weakly developed. Inner plate of maxilla 1 small, with one apical small seta, outer plate with eleven stout tooth-like spines which are bifid and are armed with several teeth on distal half, palpal hump prominently expanding, distinctly producing on outer distal end, palp uniarticulate, slightly dilating on distal part, not extending beyond outer plate, apex rounded, with two stout and three slender setae. Both plates of maxilla 2 slender, truncate, inner plate slightly shorter than outer one, with five apical setae, outer plate with three apical pairs of setae, else with two setae on outer distal margin. Both mandibles similar to each other, lacking palp, distal part not dilating, rather slender, incisor not curved, broad, with five undistinct teeth, lacinia mobilis hump-like, teeth undistinct, molar process large, complex, lacking rasp, but shriveled. Inner plate of maxilliped very small, with two short and long setae, outer plate much developed, broad, very long, gradually narrowing distally, not beyond 3rd segment of palp, outer margin with one seta at distal one third, inner margin with two proximal setae, with eleven spines on distal half of which distal one is most stout, palp rather slender, proximal two segments two thirds as long as palp, inner distal end of proximal segment with one pair of setae, inner distal end of proximal segment with one pair of setae, inner margin of 2nd segment with several sets of setae and single setae, 3rd segment about one third as long as proximal two segments combined, expanding on inner medial margin, its distal half setose, dactyl shorter than 3rd segment, stout, not falcate, with one small tooth at distal one third.

Gnathopod 1: Coxa 1 gradually expanding forward, lower margin roundish, with ten setae. Gnathopod 1 rather small. Basis about three sevenths as long as gnathopod 1, slender, anterior margin with seven long and six short setae, posterior

margin with one proximal long seta and one medial pair of long setae. Ischium short, subsquare, with one posterodistal small seta. Merus one and half times as long as ischium, gradually decreasing in width, taper, posterodistal half with two single setae and one pair of setae, anterior free margin very short. Carpus half as long as basis, gradually increasing in width, anterior margin with one medial and three distal setae, posterodistal half with two, three and seven distal setae, the greater part of these setae pectinate. Propod shorter than carpus, most expanding posteromedially, posterior submargin with one, two and three pectinate setae medially, and six distal small simple setae, posterodistal margin with three simple setae, outer lateral side with one longitudinal row of four pectinate setae, else inner lateral side with several simple setae, palm defined by four spines, but continuous to posterior margin, pectinate, with several small setae. Dactyl falcate, reaching palmar spines, with nail and one tooth near its base, pectinate on grasping margin.

Gnathopod 2: Coxa 2 rectangular, lower margin with several short setae and one posterodistal tooth, posterior submargin of inner side with three short setae. Gnathopod 2 distinctly longer than gnathopod 1. Basis three sevenths as long as gnathopod 2, anterior margin with seven short setae, posterior margin with one proximal long seta, one medial set of two long and one short setae, one distal transverse row of two long and two short setae, and one short seta on distal end. Ischium short, one and half times as long as wide, posterodistal end with one small seta. Merus one and half times as long as ischium, gradually decreasing in width, taper distally, anterior free margin short, posterodistal margin with two short bifid setae. Carpus about three fourths as long as basis, gradually increasing in width, anterior margin with one medial bifid seta and one distal pair of small setae, posterior margin with one pectinate seta, one pair of pectinate setae, one set of one simple and three pectinate setae, and one distal set of six pectinate and one simple setae. Propod two thirds as long as carpus, widest on medial margin, wider than distal part of carpus, but proximal part slightly narrower than the latter, posterior margin with eight pectinate setae which gradually increase in length, else outer side with one longitudinal row of four pectinate setae on central part, inner side with several setae, posterodistal end with six small setae. Dactyl fitting on palmar spine, falcate, hooded, with nail and one small tooth near it, grasping margin pectinate.

Peraeopod 1: Coxa 3 longer than coxa 2, rectangular, slightly curved forward, lower margin with six setae and one posterodistal small tooth. Basis about one fourth as long as peraeopod 1, stout, uniform in width, anterodistal end with three setae. Ischium about half as long as basis, with three posterodistal setae. Merus slightly shorter than basis, anterior margin with one medial small stout seta, and one distal set of one short stout and two slender setae, posterodistal half with one set of one long stout and three slender setae, one medial slender seta, and three slender and one long stout setae distally. Carpus two thirds as long as merus, narrower than the latter, posterior margin with one stout seta, one set of two pairing stout and one slender setae, and one distal set of two short and long stout setae and one slender seta. Propod subequal to basis in length, distinctly narrower than

carpus, anterodistal end with two small setae, posterior margin with three spines which gradually increase in length, one pair of one small and one long spines, and one pair of small locking spines. Dactyl stout, falcate, slightly shorter than propod.

Peraeopod 2: Coxa 4 very similar to coxa 3, but deeper than it, with two small teeth and three setae on posterodistal half. Peraeopod 2 longer than peraeopod 1. Basis about one third as long as peraeopod 2, anterodistal end with one spine. Ischium short, posterior margin three times as long as anterior one, with four distal setae. Merus two thirds as long as basis, anterior margin with one medial and one distal spines, posterior margin with one stout seta, one row of one stout, one long and one small setae, one stout seta, and one distal set of three long and one long stout setae and one spine in formula. Carpus half as long as basis, narrower than merus, posterior margin with one proximal spine, one pair of spines, two single short setae, one set of two long and short spines, and one short seta in formula. Propod as long as merus, distinctly narrower than carpus, anterodistal end with four small setae, posterior margin with three single spines and two pairs of spines. Dactyl about two thirds as long as propod, stout, falcate.

Peraeopod 3: Coxa 5 small, bilobate, lower expansion of anterior lobe small, with two distal spines. Peraeopod 3 about twice as long as peraeopod 1. Basis long oval, posterior thin plate not much expanding, a little extending beyond ischium, rounded distally, inner posterodistal end of muscular part with one spine, anteroproximal margin rounded, following one straight, with eight spines. Ischium short, wider than long, slightly producing posterodistally, with two small setae on posterodistal end. Merus as long as basis, compressed distally, anterior margin with one spine, one set of one spine and one seta, two sets of two spines and one or two setae, and one distal set of one seta and three spines of which one is long, postero-medial margin with one spine and two pairs of spines, posterodistal end with one pair of spines. Carpus two thirds as long as merus, slender, anteromedial margin with one spine, and one pair of one long and one small spines, posterodistal end with four spines and two setae, posterior margin with two medial pairs of one long and one short spines, and one set of two small and one long spines. Propod as long as carpus, gradually decreasing in width, anterior margin with two medial spines, and one distal set of one spine and four setae, posterior margin with three single spines and one pair of locking spines. Dactyl about half as long as propod, falcate.

Peraeopod 4: Coxa 6 smaller than coxa 5, bilobate, anterior lobe expanding downward, rounded, posterior lobe rectangular, lower margin with four spines. Basis about one fourth as long as peraeopod 4, anterior margin roundish on about proximal half, with six spines, posterior thin plate most expanding at proximal one third, attenuate on following part and taper distally, with one distal spine. Ischium short, wider than long, slightly producing anterodistally, anterodistal end with one spine. Merus as long as basis, gradually increasing a little in width, anterior margin with one, four, five and seven distal spines in formula, posterior margin with two medial and three distal spines. Carpus as long as merus, anterior margin with four, five and nine distal spines in formula, posterior margin with one, three

and three distal spines in formula. Propod slightly shorter and narrower than carpus, anterior margin with one, three and two spines in formula, posterior margin with one, two, one and two locking spines in formula. Dactyl two thirds as long as propod, falcate.

Peraeopod 5: Coxa 7 subequal to coxa 6 in size, rounded, lower margin with three spines and two small setae. Basis about one fourth as long as peraeopod 5, anterior margin almost straight, with one small seta and three spines, posterior thin plate rounded, most expanding medially, gradually attenuate on following part and at last pointing distally, posteromedial margin with five teeth and six setae, posterodistal end with one spine. Ischium short, wider than long, slightly producing anterodistally, apex of expansion with one spine. Merus about half as long as basis, anterior margin with one medial pair of spines and five distal spines, posterodistal end with two small and three long spines. Carpus twice as long as merus, narrower than the latter, anterior margin with one pair of spines, two transverse rows of five spines, and one row of six long and one small spines, posterior margin with one spine, one set of three spines, and one distal row of one long and three small spines. Propod three fourths as long as and distinctly narrower than carpus, anterior margin with two medial sets of three spines and one distal pair of long spines, posterior margin with three pairs of spines and one distal set of three spines. Dactyl two thirds as long as propod, falcate.

Pleopods: Pleopods similar to those of *P. barnardi* (Sheard 1938).

Uropods: Uropod 1 extending beyond uropod 2, peduncle as long as inner ramus, producing on both upper distal ends, taper, outer proximal side with three spines, outer upper margin with eight marginal and one apical spines, inner upper margin with six spines, rami pectinate marginally, bifid apically, its concavity with one spine, one pair of spines growing near its concavity, outer ramus with three spines on outer margin and one spine on inner one, inner ramus longer than outer one, with four spines on outer margin and five spines on inner one. Uropod 2 two thirds as long as uropod 1, peduncle intermediate between both rami in length,

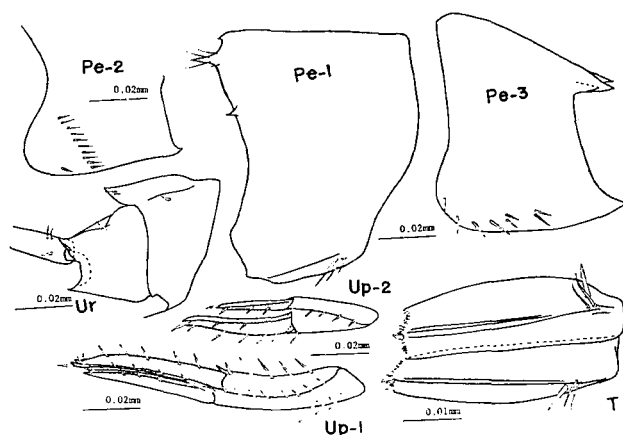


Fig. 121. *Paradexamine gigas* sp. nov. Holotype, male, 3.5 mm.

producing on both upper distal ends, outer margin with five spines, inner distal end with one spine, both rami bifid apically, concavity of both apices with one stout spine respectively, outer ramus shorter than inner one, with three spines on inner margin, outer ramus with two spines on outer margin and five spines on inner one. Uropod 3 lost.

Telson: Telson cleft thoroughly, rectangular, roundish marginally, each plate serrate distally, ridged on central line, with one stout spine at distal end of ridge, else with one pair of setae and one spine proximally.

Material examined. Holotype: Male, 3.5 mm. Type-locality: Tomioka Bay. Date: May, 1978. Paratype: 1 specimen. Collection No.: AMBL-Amph. 78.

Remarks. The present species is closely related to *P. micronesica* (Ledoyer 1978b), but is clearly distinguished from it by the following points; (1) ventrodistal end of peduncular segment 1 of antenna 1 with one tooth, (2) peduncular segment 5 of antenna 2 relatively long, and (3) propod of gnathopods relatively shortened and palm oblique.

Paradexamine setigera sp. nov.

(Fig. 122–123)

Body: Rostrum short, taper distally, anterior head lobe taper distally. Eyes large, oval. Pleonites 1–3 subequal to each other in length, pleonite 1 unarmed on back, pleonites 2–3 with three stout teeth on back, pleonal epimeron 1 rounded, but with one posteroventral acute tooth, anterior part with one oblique row of two small and four short spines, pleonal epimeron 2 producing and rounded on anterior margin, posteroventral end with one acute tooth, anterior part with one oblique row of eight spines, pleonal epimeron 3 similar to pleonal epimeron 2, but one and half times as broad as it, posteroventral tooth large, taper, anteroventral margin with four spines, ventromedial part with one pair of spines and one oblique row of four spines. Urosomite 1 lacking lateral teeth, dorsal carinate tooth developed, with one pair of spines basally, urosomites 2–3 coalescent, back concave medially, with two pairs of spines medially and distally, its opposite teeth not elevating.

Antennae: Peduncular segment 1 of antenna 1 longer than half as long as head, a little stubby, slightly expanding ventromedially, slightly producing ventro-distally, ventral margin with one medial set of two spines and one seta, and one distal set of three spines, peduncular segment 2 shorter than twice as long as peduncular segment 1, distinctly narrower than the latter, gradually decreasing a little in thickness, ventromedial margin with two sets of one spine and one seta, peduncular segment 3 very short, accessory flagellum unarticulate, vestigial, with one apical pair of setae. Peduncular segment 1 of antenna 2 very short, gland cone much developed, distinctly extending beyond peduncular segment 3, peduncular segment 4 elongate, gradually decreasing in thickness, dispersively setose in pairs and sets, peduncular segment 5 two thirds as long as peduncular segment 4, with two

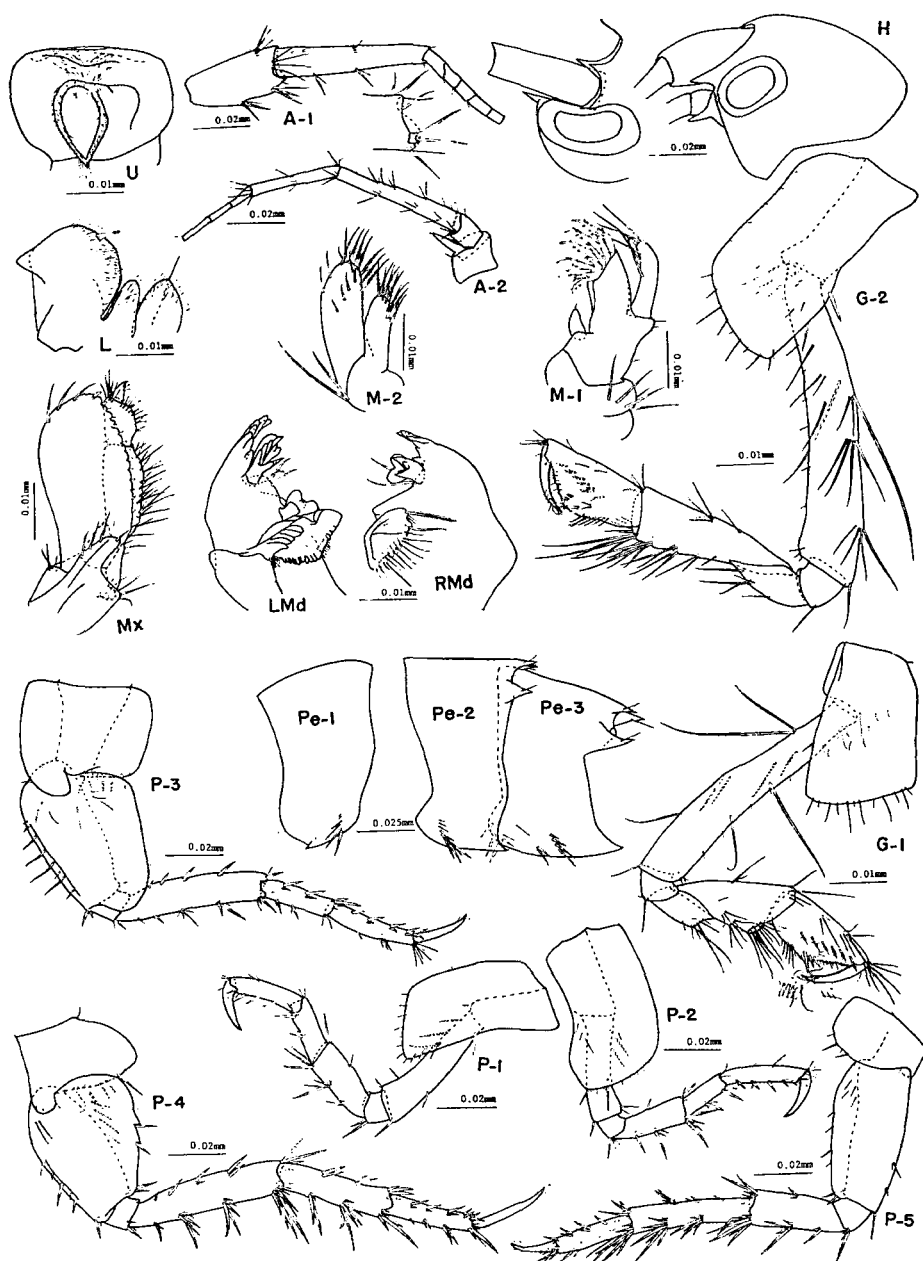


Fig. 122. *Paradexamine setigera* sp. nov. Holotype, female, 3.5 mm.

medial pairs of setae and five distal setae.

Mouthparts: Upper lip subrectangular, apical margin densely bristly. Inner plate of lower lip medium, densely bristly, outer plate broad, shoulders broad, rounded, densely bristly, with one gland cone respectively, mandibular process obsolescent, blunt. Inner plate of maxilla 1 small, with one apical seta, outer plate with

eleven serrate tooth-like spines, palpal hump hairy, with two spines, palp not extending beyond outer plate, uniarticulate, clavate, with three apical and three latero-distal setae. Inner plate of maxilla 2 distinctly shorter than outer one, inner distal margin with one single dispersively pinnate seta and five pairs of dispersively pinnate setae, outer plate with one oblique facial row of five short simple setae, distal margin with six dispersively pinnate setae on inner side and five simple setae on outer one. Both mandibles similar to each other except for lacinia mobilis and a number of accessory setae, palp absent, incisor broad, prominently producing forward, with about seven teeth, lacinia mobilis of left mandible with one accessory circular process, bifid, upper part with four teeth, lower part with three teeth, one of right mandible bifid, but both parts with two teeth respectively, accessory setae three in left mandible and two in right one, molar process developed, truncate, rugose marginally, with many setae, else with one plumose seta. Inner plate of maxilliped small, with only one apical seta and three lateral setae, outer plate very large, broad, reaching dactyl, inner margin with fourteen small conical teeth, outer distal margin with three setae, palp slender, four articulate, articles 2-3 densely setose on inner margin, article 3 expanding on inner medial margin, dactyl small, but stout, with one tooth near apex.

Gnathopod 1: Coxa 1 rectangular, lower margin dispersively setose. Basis slender, about half as long as gnathopod 1, anteromedial margin with seven small and two long setae, posterior margin with two pairs of one long and one short setae on proximal half, with two distal short single setae. Ischium short, square, posterodistal end with two small and one short setae. Merus about twice as long as ischium, taper posterodistally, posterior margin dispersively bristly, with one distal seta, distal end with short and long setae. Carpus twice as long as merus, triangular, anterior margin with one medial pair of setae and one distal row of four setae, posterior margin with two medial rows of three and five setae, posterodistal end surrounded by many setae. Propod rectangular, shorter than carpus, anterior margin about twice as long as posterior one, with two medial rows of three and five setae, and one distal row of six setae, posterior margin with one longitudinal row of six slender spines, palm oblique, straight, defined by two longer spines, else with two spines near posterodistal end, finely serrate, with many small setae, inner facial margin with one oblique row of six short and dispersively pinnate stout setae. Dactyl falcate, fitting on palm, hooded apically, grasping margin finely pectinate, with one tooth and one pair of setae near apex.

Gnathopod 2: Coxa 2 rectangular, deeper than coxa 1, lower margin dispersively setose, posteromedial margin with one stout spine. Gnathopod 2 similar to gnathopod 1, but longer and more setose than it, merus attenuate.

Peraeopod 1: Coxa 3 similar to coxa 2. Basis about one third as long as peraeopod 1, anterior margin with four single setae and one distal set of three small stiff setae, posterodistal half with two medial and distal stiff setae. Ischium short, square, wider than long, with two stout and one distal small setae. Merus half as long as basis and ischium combined, anterior margin with one medial set of one

small and one stout setae, and one distal set of one small and one long stout setae, posterior margin with one set of two small and one stout setae, one set of one minute and three stout setae, and one distal set of three slender and one stout setae. Carpus shorter and slightly narrower than merus, anterodistal end with one pair of small setae, posterior margin with one medial pair of spines, one distal pair of stout setae, and one distal small seta. Propod as long as merus, anterodistal half with one medial pair of small setae and one distal set of three small setae, posterior margin with three medial spines, one distal spine and two locking spines. Dactyl two thirds as long as propod, falcate, stout, with three minute setae near apex.

Peraeopod 2: Coxa 4 similar to coxa 3, but posterior margin slightly expanding on distal half, lacking spines. Peraeopod 2 similar to peraeopod 1 except for a number of spines and setae. Posterior margin of propod with four medial spines, one distal spine and two locking spines.

Peraeopod 3: Coxa 5 bilobate, anterior lobe narrow, producing downward, anterodistal margin rounded, posterior lobe rectangular, lower margin with four spines and three minute setae. Basis broadly expanding, most expanding proximally, gradually decreasing in width, producing beyond ischium posterodistally, posterior thin plate almost uniform in width, finely setose, anteroproximal margin clearly rounded, with two spines, following margin straight, with four small and four longer spines medially, and one distal pair of spines, inner posterodistal end of muscular part with one small spine. Ischium short, rectangular, broader than long, anterodistal end with one spine and one small seta. Merus as long as basis, almost uniform in width, producing on both distal ends, anterior margin with one spine, one set of one spine and two small setae, one set of two spines and two small setae, one set of three spines, and one distal set of three spines and two small setae, posterior margin with four medial spines, and one apical set of one spine and one small seta. Carpus about half as long as and narrower than merus, anterior margin with two medial sets of one spine and one small seta, and one distal set of four spines, posterior margin with two medial pairs of spines and four distal spines. Propod longer than carpus, anterior margin with one spine, one set of three spines and one distal set of seven setae, posterior margin with one proximal spine and four pairs of spines. Dactyl about two thirds as long as propod, falcate, with three minute setae near apex.

Peraeopod 4: Coxa 6 bilobate, anterior lobe narrow, distal extension roundish, with three minute setae, lower margin of posterior lobe with five spines. Peraeopod 4 similar to peraeopod 3 in proposition and length except for carpus, propod and dactyl. Posterior thin plate of basis most expanding proximally, gradually decreasing in width, its distal end narrow, posterior margin with two medial sets of one tooth and one spine, one distal spine and seven minute setae, anterior margin with five medial small and short spines, and one distal pair of spines, inner posterodistal end of muscular part with one spine. Anterodistal end of ischium with three spines. Anterior margin of merus with two, five, five and nine distal spines in formula, posterior margin with two proximal single spines, two medial pairs of spines

and one distal set of four spines. Carpus about three fifths as long as merus, anterior margin with three, six and five distal spines in formula, posterior margin with two medial pairs of spines and four distal spines. Propod a little shorter than carpus, anterior margin with one, two, three and two distal spines in formula, posterior margin with five pairs of spines. Dactyl two thirds as long as carpus, falcate, with three minute setae near apex.

Peraeopod 5: Coxa 7 subrectangular, lower margin roundish, with two spines and three setae on posterior half. Peraeopod 5 shorter than peraeopod 4. Basis not broadly expanding, posterior thin plate narrow, not producing distally, with four stiff setae and two distal spines marginally, anterior margin straight, with two minute setae, two spines, and one distal set of one spine and one minute seta. Ischium short, broader than long, with three anterodistal spines. Merus two thirds as long as basis, anterior margin with two, four and seven spines, posterior margin with one medial pair of spines and five distal spines. Carpus as long as ischium and merus combined, narrower than merus, anterior margin with one proximal spine, two medial sets of six and eight spines, and one distal set of nine spines, posterior margin with one, two, four and five distal spines in formula. Propod two thirds as long as and narrower than carpus, anterior margin with one spine, one pair of spines, and one distal set of two spines and four setae, posterior margin with one spine and three pairs of spines. Dactyl about half as long as propod, falcate, with three minute setae near apex.

Pleopods: Peduncle of pleopod 1 about two thirds as long as rami, stout, with one pair of coupling spines, rami slender, proximal segment of outer ramus short, with seven short pinnate setae on outer margin, proximal segment of inner ramus one fourth as long as inner ramus, with four bifid and two ordinary pinnate setae, terminal swimming setae about one third as long as rami.

Uropods: Uropod 1 not extending beyond telson, peduncle equal to rami in length, both laterodistal ends with one tooth respectively, outer lateroproximal margin with five spines, both lateral margins of upper side with three medial and one distal spines, else outer distal end with one long stout spine, both rami equal

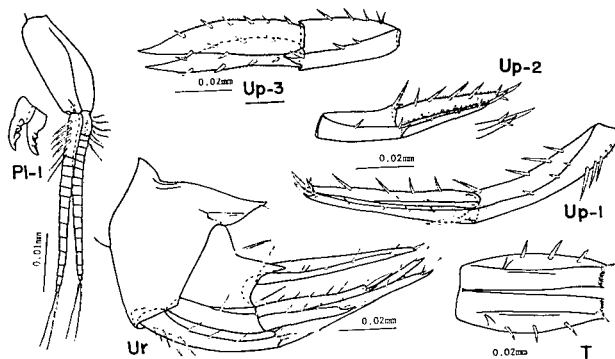


Fig. 123. *Paradexamine setigera* sp. nov. Holotype, female, 3.5 mm.
Up-3; Paratype no. 2, female, 3.5 mm.

to each other in length, extending distally, apices with one pair of spines and one central stout spine respectively, else outer margin of outer ramus with four spines, outer margin of inner ramus with two small spines, inner margin minutely pectinate, with four spines. Uropod 2 half as long as uropod 1, peduncle as long as outer ramus, taper on both upper distal ends, outer margin with two medial and distal spines, inner margin with one distal spine, rami finely pectinate marginally, producing distally, with one pair of spines and one central stout spine, outer ramus about three fourths as long as inner one, both margins with two medial spines respectively, outer margin of inner ramus with two small spines, inner margin with four spines. Peduncle of uropod 3 two thirds as long as rami, with one stout tooth on outer laterodistal end, outer margin with two medial and one distal spines, inner margin with one proximal set of one spine and one seta, and three spines, both rami equal to each other in length, finely pectinate marginally except for distal margin, outer ramus with four pairs of spines, inner ramus with two spines on outer margin and six spines on inner one.

Telson: Telson completely cleft, subrectangular, roundish on lateral margin, each plate ridged on central line, distal end pectinate, with one spine, outer margin with three spines, else upper proximal part with one pair of small simple setae.

Material examined. Holotype: Female, 3.5 mm. Type-locality: Tomioka Bay. Date: May, 1978. Paratype: 1 specimen. Collection No.: AML-Amph. 81.

Remarks: The present species is closely related to *P. micronesica* (Ledoyer 1978b) in the mandibular process, but it is distinctly distinguished from the latter by the mandible lacking accessory setae.

(to be continued)